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THE TRANSACTIONS

OF THE

EDINBURGH OBSTETRICAL SOCIETY

THE TRANSACTIONS

OF THE

EDINBURGH OBSTETRICAL SOCIETY.

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PREFACE.

THIS, the twenty-eighth volume of the Society's Transactions, contains a record of its proceedings during the Session 1902–1903.

In it, as in former volumes, the views brought forward in the Papers are to be considered as those of the writers themselves, and not as those of the Society as a body.

THE EDITOR.

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	John Smith, M.D., M.R.C.S. Eng., *Kirkcaldy*,	1885
	Allan Cuthbertson Sym, M.D., C.M.,	1885
	Frederick J. Underhill, F.R.C.S. Ed., L.R.C.P. Ed., *British Columbia*,	1885
105	William Gayton, M.D., M.R.C.P.L., M.R.C.S. Eng., *London*,	1885
	*Alexander Matthew, F.R.C.S. Ed., *Corstorphine*,	1885

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	Alexander Somerville Cumming, M.D., F.R.C.P. Ed.,	1885
	Gustave Michael, M.B., C.M., *London*,	1885
	*James Haig Ferguson, M.D., F.R.C.P. Ed., M.R.C.S. Eng.,	1885
110	John Edward Gemmell, M.B., C.M., *Liverpool*,	1885
	Robert Stewart, M.B., C.M.,	1885
	Surgeon-Captain Robert Charles Macwatt, M.B., B.Sc., C.M., 7th Bengal Cavalry, *Bombay*,	1885
	*E. H. Lawrence Oliphant, M.D., C.M., *Glasgow*,	1885
	Andrew Wallace Walker, L.R.C.P. Ed., L.F.P. & S. Glasg.,	1886
115	James Hogarth Pringle, M.B., F.R.C.S. Eng., *Glasgow*,	1886
	Robert Swan Aitchison, M.D., F.R.C.P. Ed.,	1886
	John Walton Hamp, L.F.P. & S. Glasg., L.S.A., *Wolverhampton*,	1886
	John Dickinson Leigh, M.D., F.R.C.S. Ed., *Bishop-Auckland*,	1886
	James Auriol Armitage, M.D., C.M., *Wolverhampton*,	1886
120	William Henry Miller, M.D., F.R.C.P. Ed.,	1886
	John M'Call, L.R.C.P. Ed.,	1886
	Thomas Wood, M.B., C.M.,	1886
	Hugh M'Callum, L.R.C.P. & S. Ed., *Kinloch-Rannoch*,	1887
	Nutting Stuart Fraser, M.B., M.R.C.S. Eng., *St John's, Newfoundland*,	1887
125	Augustus Alexander Matheson, M.D., F.R.C.P. Ed.,	1887
	Robert Mackenzie, M.D., C.M., *Nairn*,	1887
	Simon Linton, M.B., C.M., *Kessingland*,	1887
	Thomas Jackson Thyne, M.B., F.R.C.P. Ed.,	1887
	John St Clair Boyd, M.D., M.Ch., *Belfast*,	1887
130	Briton Smallman Robson, M.B., C.M., *Newcastle-on-Tyne*,	1887
	Ernest T. Roberton, M.D., M.R.C.S. Eng., *New Zealand*,	1887
	*Samuel Sloan, M.D., F.F.P. & S. Glasg., *Glasgow*,	1887
	James Wm. Fox, L.R.C.P. & S. Ed., *Southampton*,	1887
	John Frederick Sturrock, M.B., C.M., *Broughty-Ferry*,	1887
135	Alexander Primrose, M.B., M.R.C.S. Eng., *Toronto, Canada*,	1887
	Arthur Perigal, M.D., M.R.C.S. Eng., *New Barnet, Herts*,	1887
	James Aitken Clark, M.B., C.M.,	1887
	Edward Carmichael, M.D., F.R.C.P. Ed.,	1887
	Percival Humble Watson, M.R.C.S. Eng., L.R.C.P. Ed., *Newcastle-on-Tyne*,	1887
140	Charles Clark Teacher, M.B., C.M.,	1887
	Robert Inch, M.B., C.M., *Gorebridge*,	1887
	Ellis Thomas Davies, M.D., M.R.C.S. Eng., *Liverpool*,	1887
	John Orr, M.B., C.M., *Eccles, Lancashire*,	1887
	*George Owen Carr Mackness, M.D., C.M., *Broughty-Ferry*,	1887
145	Francis Joseph Baildon, M.B., C.M., *Southport*,	1887
	Surgeon-Lt. Ralph H. Maddox, M.B., M.R.C.S. Eng., I.M.S., *Bengal*,	1887
	James Williamson Martin, M.D., F.R.C.P. Ed., *Dumfries*,	1887
	James Andrew Blair, M.D., C.M., D.Sc., *Newcastle-on-Tyne*,	1887
	*John Thomson, M.D., F.R.C.P. Ed.,	1887
150	Robert Kirk, M.D., F.R.C.S. Ed., *Bathgate*,	1887
	*William Fraser Wright, M.B., C.M., *Leith*,	1887
	Alexander Bruce, M.D., F.R.C.P. Ed.,	1887
	Richard Joseph Tristan, L.R.C.P. & S. Ed., *Retford, Notts*,	1887
	Robert Henry Blaikie, M.D., F.R.C.S. Ed.,	1888
155	James Hutcheson, M.D., F.R.C.S. Ed.,	1888
	A. A. Jervis Pereira, M.D., *Delagoa Bay*,	1888
	Christopher Martin, M.B., F.R.C.S. Eng., *Birmingham*,	1888
	John George Havelock, M.D., C.M., *Montrose*,	1888
	John Pirie, M.B., C.M.,	1888
160	James Gibson Graham, M.B., C.M., *Glasgow*,	1888
	Robert Adams Brewis, M.D., C.M., *Dursley*,	1888
	John Allison, M.D., C.M., *Kettering, Northampton*,	1888
	Archibald Cowan Guthrie, M.B., C.M.,	1888
	Samuel Beatty, M.B., C.M., *Pitlochry*,	1888

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165	Professor James Chalmers Cameron, M.D., *Montreal*,	1888
	Albert Edward Morison, M.B., F.R.C.S. Ed., M.R.C.S. Eng., *West Hartlepool*,	1888
	George H. Temple, M.B., C.M., *Weston-super-Mare*,	1888
	Norman L. Boxill, M.B., C.M., *Barbados*,	1888
	John Hunter Helm, M.B., C.M., *Ratho*,	1888
170	George Scott MacGregor, M.D., C.M., *Glasgow*,	1888
	William Sneddon, M.B., C.M., *Cupar-Fife*,	1888
	Thomas Watts Eden, M.B., C.M., *London*,	1888
	William Fordyce, M.D., F.R.C.P. Ed.,	1888
	Charles E. Harvey, M.B., M.R.C.S. Eng., *Sav-la-Mar, Jamaica*,	1889
175	Alexander Lang Murray, L.R.C.P. & S. Ed., *Australia*,	1889
	*George Pirrie Boddie, M.B., C.M.,	1889
	James F. W. Ross, M.D., *Toronto, Canada*,	1889
	J. Stuart Nairne, F.R.C.S. Ed., F.F.P. & S. Glasg., *Glasgow*,	1889
	James S. Fox, M.B., M.R.C.S. Eng., *St Helens*,	1889
180	S. M'Murtry, M.D., *Louisville, Kentucky, U.S.A.*,	1889
	Hugh Jamieson, M.D., C.M.,	1889
	Thomas Wm. Nassau Greene, L.R.C.P. Ed., L.R.C.S.I., *Carlow*,	1889
	Professor John Clarence Webster, M.D., F.R.C.P. Ed., *Chicago*,	1889
	William George Aitchison Robertson, M.D., F.R.C.P. Ed.,	1889
185	William Basil Orr, M.D., C.M.,	1889
	*Edward Farr Armour, M.B., C.M.,	1889
	George Wilkinson, M.D., C.M., *Liverpool*,	1889
	*James Lamond Lackie, M.D., F.R.C.P. Ed.,	1889
	James Wilson, M.B., C.M.,	1889
190	Archibald Maclean, M.D., C.M., *Kilmarnock*,	1890
	Frederick William Lyle, M.D., C.M., *London*,	1890
	Thomas Dobson Poole, M.D., C.M., *St Anne's-on-the-Sea*,	1890
	Charles Newberry Cobbett, M.D., C.M., *London*,	1890
	Alexander William Gordon Price, M.B., C.M.,	1890
195	Hugh Shapter Robinson, M.R.C.S. Eng., L.R.C.P. Ed., *London*,	1890
	*George Matheson Cullen, M.D., C.M.,	1890
	Frederick Albert L. Lockhart, M.B., C.M., *Montreal, Canada*,	1890
	Edmund Frederick Tanney Price, M.B., C.M.,	1890
	Ernest Theophilus Roberts, M.D., C.M., *Keighley*,	1890
200	Owen Foulkes Evans, M.D., C.M., *Liverpool*,	1890
	James Duncan Farquharson, M.B., C.M., *Newcastle-on-Tyne*,	1890
	Harvey Littlejohn, M.B., F.R.C.S. Ed.,	1890
	Carstairs Cumming Douglas, M.D., F.F.P. & S. Glasg., *Glasgow*	1890
	Robert Wise, M.D., C.M., *London*,	1890
205	William Russell, M.D., F.R.C.P. Ed.,	1890
	Alexander Scott Duncan, M.B., C.M., *London*,	1890
	Prof. William Keiller, F.R.C.S. Ed., *Galveston, Texas, U.S.A.*,	1890
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	Gains T. Smith, M.D., *Moncton, New Brunswick*,	1891
210	John Hugh Alexander Laing, M.B., C.M.,	1891
	Robert Thin, M.B., F.R.C.P. Ed.,	1891
	Alexander Henry Vassie, M.B., C.M., *London*,	1891
	James Harvey, M.D., C.M.,	1891
	Alexander Henderson, M.B., C.M.,	1891
215	James Smith, M.D., C.M.,	1891
	George Balfour Marshall, M.D., C.M., *Glasgow*,	1891
	William Booth, F.R.C.S. Ed.,	1891
	Richard T. Yoe, M.D., *Louisville, Kentucky, U.S.A.*,	1891
	Alexander Bruce Giles, M.D., C.M.,	1891
220	Hamilton Graham Langwill, M.D., F.R.C.P. Ed., *Leith*,	1891
	Herbert Ernest Lee, M.B., C.M., *Australia*,	1891
	Charles Martin, M.B., C.M., *Newton Abbot*,	1892

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	William Murray Cairns, M.B., C.M., *Liverpool*,	1892
	Robert Dundas Helm, M.D., C.M., *Carlisle*,	1892
225	William Wood, M.B., C.M.,	1892
	James Thomas Moore Giffen, F.R.C.S. Ed., *Chester*,	1892
	Frank Dendle, M.B., D.P.H., *Isleworth*,	1892
	Frederick Thomas Anderson, M.D., F.R.C.S. Ed., *Braunton*,	1892
	Simson Carstairs Fowler, M.B., C.M., *Juniper Green*,	1892
230	Hugh Ernest Fraser, M.D., C.M., *Dundee*,	1892
	Prof. John Alexander Campbell Kynoch, M.B., F.R.C.P. Ed., *Dundee*,	1892
	Alexander Brown Ritchie, M.B., C.M., *Hulme, Manchester*,	1892
	Walter John Shaw, M.B., C.M., *Cockburnspath*,	1892
	Robert Stirling, M.D., C.M., *Perth*,	1892
235	William Henry Vickery, F.R.C.S. Eng., L.R.C.P. Lond., *Newcastle-on-Tyne*,	1892
	William Ramsay Smith, M.B., C.M., *Australia*,	1892
	A. Watson Munro, M.D., *Sydney, Australia*,	1892
	Charles Frederick Ponder, M.B., C.M., *Tasmania*,	1892
	John Tod, M.B., C.M., *Leith*,	1892
240	George Thomas C. Adams, L.R.C.P. & S. Ed., *Melbourne, Aust.*,	1892
	George Henry Walter Smith, M.D., C.M., *Sydney, Australia*,	1892
	Charles Croomhall Easterbrook, M.D., C.M., *Ayr*,	1892
	Walter Petrie Simpson, M.B., C.M., *Bathgate*,	1892
	*James Ernest Moorhouse, M.D., C.M., *Stirling*,	1892
245	D. W. Johnston, F.R.C.S. Ed., *Johannesburg, South Africa*,	1892
	David George Davidson, M.B., C.M.,	1892
	Allen Thomson Sloan, M.D., C.M.,	1893
	Robert Balfour Graham, F.R.C.S. Ed., *Leven, Fife*,	1893
	Albert Frederic Rosa, M.D., C.M.,	1893
250	George Benjamin Mitchell, M.B., C.M., *Whitby*,	1893
	Henry Robins, M.D., *Jamaica*,	1893
	Linn J. Schofield, M.D., *Warrensburg, Mo., U.S.A.*,	1893
	David Milligan, M.B., C.M.,	1893
	George Morton Wilcockson, L.R.C.P. & S. Ed., *Reading*,	1893
255	John MacRae, M.D., C.M., *Murrayfield*,	1893
	Ernest Switzer Forde, L.R.C.P. & S. Ed., *Dalry, Galloway*,	1893
	George Wade, M.D., C.M., *Melrose*,	1893
	Philip Grierson Borrowman, M.D., C.M., *Crieff*,	1893
	William Herbert Gregory, M.D., C.M., *Beverley, Yorks*	1893
260	James Gibson Cattanach, M.B., F.R.C.P. Ed.,	1893
	Alexander Maitland Easterbrook, M.B., C.M., *Gorebridge*,	1893
	Robert William Roberts, L.R.C.P. & S. Ed., *South Wales*,	1894
	Claude Buchanan Ker, M.D., F.R.C.P. Ed.,	1894
	John Malcolm Farquharson, M.B., C.M.,	1894
265	Charles Alexander Butchart, M.B., C.M.,	1894
	Frederick Maurice Graham, F.R.C.S. Ed., L.R.C.P. Ed.,	1894
	Robert Hoggan, M.B., C.M., *Liberton*,	1894
	James Livingstone Thompson, M.B., C.M., *Australia*,	1894
	John Stevens, M.D., F.R.C.P. Ed.,	1894
270	Hugh Lewis Hughes, L.R.C.P. & S. Ed., *Dowlais*,	1894
	Sylvanus Glanville Morris, M.D., C.M., *Mardy*,	1894
	Georges P. Coromilas, M.D., *Athens, Greece*,	1894
	Thomas Easton, M.D., C.M., *Southampton*,	1894
	David Robertson Dobie, M.D., C.M., *Crieff*,	1894
275	Gopal Govind Vatve, M.D., *Bombay*,	1894
	Robert William Beesley, M.D., C.M., *Bolton*,	1894
	William A. Stephen, M.D., C.M., *Loftus-in-Cleveland*,	1894
	William Edward Fothergill, M.D., C.M., *Manchester*,	1894
	George Sandison Brock, M.D., C.M., *Rome*,	1894
280	John M. Munro Kerr, M.B., C.M., *Glasgow*,	1894
	John Montgomery, M.B., C.M., *Birmingham*,	1895
	*Robert Cochrane Buist, M.D., C.M., *Dundee*,	1895

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	Robert Thomson Ferguson, M.B., C.M., *Anstruther*,	1895
	William Henry Stephenson, L.R.C.P.& S.Ed., L.F.P.& S.Glasg., *Manchester*,	1895
285	Angus Vallance MacGregor, M.D., C.M., *Hartlepool*,	1895
	Charles William Donald, M.B., F.R.C.S. Ed., *Carlisle*,	1895
	John Struthers, M.B., C.M., *Transkei, South Africa*,	1895
	B. W. Broad, M.B., C.M., *Cardiff*,	1895
	Edwin Hindmarsh, M.B., C.M., *Bengal*,	1895
290	Patrick Mackin, M.D., F.R.C.S. Ed., *New Zealand*,	1895
	G. Edgar Helme M.B., C.M., *Manchester*,	1895
	Percy Theodore Hughes, M.B., C.M., *Bexley*,	1895
	John Hosack Fraser, M.B., F.R.C.P. Ed., *Bridge of Allan*,	1895
	Stewart Grant Ogilvy, M.B., C.M., *Fauldhouse*,	1895
295	Thomas Howard Morgan, M.D., F.R.C.S. Ed., *Queensland, Aust.*,	1895
	William Macrae Taylor, M.B., F.R.C.S. Ed.,	1895
	David James Graham, M.D., F.R.C.P. Ed.,	1895
	Walter William Chipman, M.D., F.R.C.S. Ed., *Montreal*,	1895
	John Cumming, F.R.C.S. Ed., F.R.C.P. Ed.,	1896
300	Sol Jervois Aarons, M.D., C.M., *London*,	1896
	Robert Beveridge, M.B., C.M., *Leith*,	1896
	John Anderson, M.B. C.M., *Pitlochry*,	1896
	Thomas John Burton, M.D., C.M., *Bearsden*,	1896
	Robert M'William Leith, M.D., C.M., *Port Elizabeth, Cape Colony*,	1896
305	Robert Gordon M'Kerron, M.B., C.M., *Aberdeen*,	1896
	Frederick John M'Cann, M.D., M.R.C.P.L., *London*,	1896
	David Robert Taylor, L.R.C.P. & S.Ed., *Ayton*,	1896
	James Curtis Whyte, M.D., C.M.,	1896
	George William Simla Paterson, M.B., C.M.,	1896
310	William Robert Martine, M.B., C.M., *Haddington*,	1896
	Robert Henry Watson, M.D., C.M., *Hamilton*,	1896
	Thomas Marshall Callender, M.D., C.M., *Sidcup*,	1896
	Lewis Grant, M.B., C.M., *Neston*,	1896
	Robert Robertson, M.B., C.M.,	1897
315	James Wilkie, L.R.C.P. & S. Ed., *Portobello*,	1897
	Andrew Graham, M.D., *Currie*,	1897
	Douglas Chalmers Watson, M.B., F.R.C.P. Ed.,	1897
	Roderick Murdoch Matheson, M.D., C.M.,	1897
	Robert Jardine, M.D., F.F.P.S.Glasg., M.R.C.S. Eng., *Glasgow*,	1897
320	Daniel Charles Edington, M.D., C.M., *Penrith*,	1897
	Edwin Arthur Gibson, M.B., C.M., *Glasgow*,	1897
	John Macmillan, M.D., F.R.C.P. Ed.,	1897
	Harold Sherman Ballantyne, M.B., C.M., *Dalkeith*,	1897
	Ernest Edward Porritt, M.D., F.R.C.S. Ed., *New Zealand*,	1897
325	William John Garbutt, M.B., C.M., *Birmingham*,	1897
	Henry John Forbes Simson, M.B., F.R.C.S. Ed., *London*,	1897
	William Herbert Goldie, M.D., C.M., *Auckland, New Zealand*,	1897
	William Alexander Potts, M.D., C.M., *Birmingham*,	1897
	Angus Macdonald, M.B., F.R.C.S. Ed.,	1897
330	Bernard Samuel Story, M.D., F.R.C.S. Ed., *Annfield Plain*,	1898
	Alexander Macdonald, M.B., F.R.C.S. Ed.,	1898
	George Robert Livingston, M.B., C.M., *Dumfries*,	1898
	Charles Carmichael Forrester, M.B., C.M.,	1898
	William Morrison Milne, M.B., C.M.,	1898
335	William Joseph Murphy Barry, M.D., M.R.C.P. Ed., *Penarth*,	1898
	Harold Malcolmson, M.B., C.M., *Burma*,	1898
	John Christie Forbes, L.R.C.P. & S. Ed., *Liberton*,	1898
	Alexander Cruikshank Ainslie, M.D., C.M.,	1898
	Henry Aylmer Dumat, M.D., F.R.C.P. Ed., *Durban, South Africa*,	1898
340	Gabriel Maurange, M.D., *Paris*,	1898
	John Thomas Woodside, L.R.C.P. & S. Ed., *Holywood*,	1898

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	George Freeland Barbour Simpson, M.B., F.R.C.S. Ed., M.R.C.P. Ed.,	1898
	Alfred Charles Sandstein, M.D., Ch.B., *Isle of Skye*,	1898
	Alfred Shearer, M.B., Ch.B., *Newtown, N. Wales*,	1898
345	John Henry Rhodes, M.B., Ch.B., *Birmingham*,	1898
	James Duncan Slight, M.D., Ch.B., *Leicester*,	1898
	Francis John Harvey Bateman, M.B., C.M., *London*,	1898
	Robert John Johnston, M.B., C.M.,	1899
	George Lyall Chiene, M.B., F.R.C.S. Ed.,	1899
350	Percy Theodore Herring, M.D., C.M.,	1899
	William Bertie Mackay, M.D., *Berwick-on-Tweed*,	1899
	Carel Hendrick Krüger, M.D., F.R.C.S. Ed., *Cape Colony*,	1899
	Captain Patrick Wilkins O'Gorman, M.D., D.P.H., *India*,	1899
	Edward William Scott Carmichael, M.D., F.R.C.S. Ed.,	1899
355	James Wilson M'Brearty, F.R.C.S. Ed., L.R.C.P. Ed., *New Zealand*,	1899
	John D. Cameron, M.D., *Montreal*,	1899
	George Crewdson Thomas, M.D., C.M., *London*,	1899
	John Eason, M.B., F.R.C.P. Ed., *Leith*,	1899
	William John Barclay, M.D., Ch.B.,	1899
360	Frederick Adolphus Fleming Barnardo, M.B., Ch.B., *Bournemouth*,	1899
	Alexander Dingwell Fordyce, M.B., F.R.C.P. Ed.,	1899
	William Thomas Ritchie, M.D., F.R.C.P. Ed.,	1899
	Owen, St John Moses, M.D., C.M., B.Sc., *Calcutta*,	1900
	Charles Wakeham Holmested, L.R.C.P. & S. Ed., L.F.P.S. Glasg., *Tuxford*,	1900
365	Donald MacGregor, M.D., C.M., *Jedburgh*,	1900
	Harry Oliphant Nicholson, M.B., C M.,	1900
	Thomas Scott Brodie, M.B., C.M., *Wishaw*,	1900
	William Hope Fowler, M.B., Ch.B.,	1900
	John Stanley Manford, M.B., B.S., *Newcastle-on-Tyne*,	1900
370	Ogden Watson Ogden, M.D., M.R.C.S., *Newcastle-on-Tyne*,	1900
	John Craig, M.B., Ch.B.,	1900
	William Hartley Bunting, M.D., F.R.C.S. Ed.,	1900
	Theodore Charles Mackenzie, M.B., Ch.B.,	1900
	Donald George Hall, M.B., M.R.C.S. Eng., *Gatehouse-of-Fleet*,	1900
375	Hugh Corbett Taylor Young, M.D., C.M., *Sydney*,	1900
	John Boyd Jamieson, M.D., F.R.C.S. Ed.,	1900
	William Alfred Johnstone Alexander, M.B., C.M.,	1900
	Malcolm M'Larty, M.B., C.M.,	1900
	Peter Joseph Henry Ferguson, M.B., C.M.,	1900
380	Frederick Gardiner, M.D., C.M.,	1900
	George Mackie, M.B., Ch.B., *Malvern*,	1900
	Kenmure Melville, M.B., Ch.B.,	1900
	John Thomas Dickie, L.R.C.P. & S. Ed.,	1900
	William Ernest Frost, M.B., Ch.B.,	1900
385	Frederick David Simpson, M.D., F.R.C.S. Ed.,	1900
	Francis Wilfrid Harlin, F.R.C.S. Ed., L.R.C.P. Ed., *Australia*,	1900
	William Darling, M.B., F.R.C.S. Ed.,	1900
	Robert Macfarlane Mitchell, M.B., F.R.C.S. Ed.,	1900
	Malcolm Campbell, M.B., F.R.C.S. Ed.,	1900
390	James Ramsay Munro, M.D., Ch.B., *Bolton*,	1901
	George James Rogerson Carruthers, M.B., Ch.B.,	1901
	Jessie Maclaren MacGregor, M.D., C.M.,	1901
	Hilda Maud M'Farlane, L.R.C.P. & S. Ed., *Larbert*	1901
	George Dickson, M.D., C.M.,	1901
395	Elsie Maud Inglis, M.B., C.M.,	1901
	George Robertson, L.R.C.P. & S. Ed., *Dunfermline*,	1901
	John Jeffrey, M.B., F.R.C.S. Ed., *Jedburgh*,	1901
	John Wishart Kerr, M.B., Ch.B.,	1901

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	William Harold Graham Aspland, M.D., M.R.C.S. Eng., *Newfoundland*,	1901
400	William Taylor McArthur, M.D., F.R.C.S. Ed., *California*,	1901
	Alexander Waddel Greenhorn Clark, M.B., C.M.,	1901
	James Martin Reid, M.D., F.R.C.S. Ed.,	1901
	Henry Overton Hobson, M.D., C.M., *London*,	1901
	Robert Patton Ranken Lyle, M.D., Ch.B., *Newcastle-on-Tyne*,	1901
405	Alexander Girvan, M.D., F.R.C.S. Ed., *Maybole*,	1901
	Frederick William Kerr Tough, L.R.C.P. & S. Ed., *Leith*,	1901
	Robert Ashleigh Glegg, M.B., Ch.B.,	1901
	Walter Scott Patton, M.B., Ch.B., *India*,	1901
	David Whiteside Maclagan, M.B., Ch.B., *New Zealand*,	1901
410	Kennedy C. M'Ilwraith, M.B., M.C.P. & S. Ont., *Toronto*,	1901
	Robert Alexander John Harper, M.B., Ch.B., *Dalkeith*,	1901
	William Hogg Prentice, M.B., Ch.B.,	1901
	Alexander Mowatt Malcolmson, M.B., Ch.B., *Leith*,	1901
	Thomas Davey Luke, M.B., F.R.C.S. Ed.,	1901
415	David Albert Callender, M.B., Ch.B., *Leith*,	1901
	Caleb Williams Saleeby, M.B., Ch.B.,	1902
	John Andrew Douglas Thompson, *Port William*,	1902
	John Ligertwood Green, M.B., Ch.B.,	1902
	William Sloss, M.B., Ch.B., *Australia*,	1902
420	Charles James Hill Aitken, M.D., C.M., *Cape Colony*,	1902
	E. R. Secord, M.D., *Ontario*,	1902
	F. E. Thompson, M.D., *Montreal*,	1902
	John M'Gibbon, M.B., C.M.,	1902
	Peter Burden M'Nicol, M.D., C.M., *Stirling*,	1902
425	Thomas James Thomson, M.D., C.M.,	1902
	Charles Mowbray Pearson, M.B., Ch.B.,	1902
	Ewen John Maclean, M.D., M.R.C.P. Lond., *Cardiff*,	1902
	James William Somerville, M.D., C.M., *Galashiels*,	1902
	Alexander Miller, L.R.C.P. Ed., L.F.P.S. Glasg., *Glasgow*,	1902
430	Hugh Faulkner, M.B., Ch.B.,	1902
	Duncan Macnab Callender, M.B., Ch.B.,	1902
	Robert Cranston Low, M.B., Ch.B.,	1902
	Benjamin Philip Watson, M.B., Ch.B., *Largo*,	1902
	John Macdonald, M.B., C.M., *Cupar-Fife*,	1902
435	Mabel Hardie, M.B., Ch.B., *Glasgow*,	1902
	John Sullivan, M.B., Ch.B.,	1902
	Charles William Somerville, M.B., Ch.B., *Dalkeith*,	1902
	Frank Mayes Willcox, M.B., C.M.,	1902
	John Tennant, M.B., C.M., *Belfast*,	1902
440	Alexander Simpson Wells, M.B., F.R.C.S. Ed., *Cape Town*,	1903
	Andrew Binny Flett, M.B. Ch.B.,	1903
	William Henry Eden Brand, F.R.C.S. Ed., L.R.C.P. Ed.,	1903
	Francis Cavanagh, M.B., Ch.B., *Sheffield*,	1903
	Alfred Lambré White, L.R.C.P. & S. Ed., *North Berwick*,	1903
445	Robert Bathgate Johnston, L.R.C.P. & S. Ed.,	1903
	William Llewellyn Jones, M.D., F.R.C.S. Ed., *Merthyr-Tydvil*,	1903
	Robert Wilson Gibson, M.D., F.R.C.S. Ed., *Orton*,	1903
	Philip Henry Mules, M.B., Ch.B.,	1903
	Andrea Francis Honyman Rabayliati, *Ben Rhydding*,	1903

ORDINARY FELLOWS.

ARRANGED ALPHABETICALLY.

(a.) LIFE MEMBERS.

		Date of Admission.
	Anderson, Dr John, Pitlochry,	1896
	Barbour, Dr A. H. Freeland, 4 Charlotte Square,	1879
	Barclay, Dr William John, Australasian Club, Melbourne Place,	1899
	Brock, Dr G. Sandison, 2 Via Veneto, Rome,	1894
5	Cavanagh, Dr Francis, 396 Ecclesall Road, Sheffield,	1903
	Craig, Dr John, 71 Bruntsfield Place,	1900
	Craig, Dr William, 71 Bruntsfield Place,	1870
	Croom, Sir John Halliday, 25 Charlotte Square,	1870
	Cumming, Dr John, 20 Gilmore Place,	1896
10	Dumat, Dr Henry Aylmer, 7 Devonshire Place, Durban, Natal, South Africa,	1898
	Gibson, Dr R. Wilson, Town Head House, Orton, Tebay,	1903
	Hart, Dr D. Berry, 29 Charlotte Square,	1877
	Johnston, Dr D. W., P.O. Box 2022, Johannesburg, Transvaal,	1892
	Livingston, Dr George R., 35 George Street, Dumfries,	1898
15	M'Arthur, Dr W. Taylor, 959 S. Figueroa St., Los Angeles, California,	1901
	M'Brearty, Dr J. Wilson, Greymouth, West Coast, New Zealand,	1899
	M'Farlane, Dr Hilda M., Stirling District Asylum, Larbert,	1901
	Martin, Dr Christopher, Cleveland House, George Road, Edgbaston, Birmingham,	1888
	Morgan, Dr T. H., Gympie, Queensland, Australia,	1895
20	Murray, Dr R. Milne, 11 Chester Street,	1880
	Pereira, Dr A. A. Jervis, Consul de Grèce en Mozambique, Lourenço Marques, Delagoa Bay, South Africa,	1888
	Ponder, Dr Charles F., Glenorchy, Hobart, Tasmania,	1892
	Ranking, Dr J. E., Tunbridge Wells,	1881
	Ross, Dr James F. W., 481 Sherbourne Street, Toronto, Canada,	1889
25	Simpson, Professor A. R., 52 Queen Street,	1858
	Simpson, Dr G. F. Barbour, 50 Melville Street,	1898
	Simpson, Dr W. Petrie, Viewbank, Bathgate	1892
	Struthers, Dr John, Nqamakwe, Transkei, South Africa,	1895
	Vatve, Dr Gopal Govind, care of H.H. The Rajah of Miraj, Bombay, India,	1894
30	Wells, Dr A. Simpson, c/o Dr Sharp, Mowbray, Cape Town, South Africa,	1903

(b.) ANNUAL SUBSCRIBERS.

	Aarons, Dr S. Jervois, 14 Stratford Place, London, W.,	1896
	Adam, Dr George Rothwell, 84 Collins Street, Melbourne, Australia,	1879
	Adams, Dr George T. Cooke	1892
	Affleck, Dr J. O., 38 Heriot Row,	1869
35	Ainslie, Dr A. C., 20 Newington Road,	1898
	Aitchison, Dr R. S., 74 Great King Street,	1886
	Aitken, Dr C. J. Hill, c/o Dr Mackinnon, Somerset East, Cape Colony,	1902
	Alexander, Dr W. A. Johnstone, 1 George Place,	1900
	Alexander, Dr W. B., 8 Blenheim Place,	1882
40	Allison, Dr J., Fuller House, Kettering, Northampton,	1888
	Anderson, Dr Fred. T., Braunton, N. Devon,	1892
	Andrew, Dr James, 2 Atholl Crescent,	1868

		Date of Admission.
	Archibald, Dr J., Hazelden, Wimborne Road, Bournemouth,	1877
	Armitage, Dr J. A., 28 Waterloo Road South, Wolverhampton,	1886
45	Armour, Dr E. F., 149 Bruntsfield Place,	1889
	Aspland, Dr W. H. Graham, Harbour Grace, Newfoundland,	1901
	Baildon, Dr F. J., 42 Hoghton Street, Southport,	1887
	Balfour, Dr Andrew, 23 Abercorn Terrace, Portobello,	1877
	Ballantyne, Dr A., Dalkeith,	1870
50	Ballantyne, Dr H. S., Dalkeith,	1897
	Ballantyne, Dr J. W., 24 Melville Street,	1883
	Barnardo, Dr F. A. F., Glendhoon, Surrey Road, Bournemouth,	1899
	Barrington, Dr Fourness, 213 Macquarrie Street, Sydney, Australia,	1884
	Barry, Dr W. J. M., 17 Hickman Road, Penarth,	1898
55	Bateman, Dr F. J. Harvey, Heath End, Blackheath, London, S.E.,	1898
	Beatty, Dr Samuel, Craigvar, Pitlochry,	1888
	Beesley, Dr R. W., 135 Deane Road, Bolton,	1894
	Bell, Dr J. Lumsden, Driffield, Yorkshire,	1884
	Bell, Dr Robert, 29 Lynedoch Street, Glasgow, W.,	1878
60	Bentley, Dr G. H., Kirkliston,	1877
	Beveridge, Dr Robert, 9 James Place, Leith,	1896
	Black, Dr Alexander, 13 Howe Street,	1881
	Black, Dr J. Watt, 15 Clarges Street, Piccadilly, London, W.,	1863
	Blaikie, Dr R. H., 10 Mayfield Gardens,	1888
65	Blair, Dr J. A., 16 Windsor Terrace, Newcastle-on-Tyne,	1887
	Bleloch, Dr A., 2 Lonsdale Terrace,	1876
	Boddie, Dr G. P., 73 Bruntsfield Place,	1889
	Booth, Dr William, 2 Minto Street,	1891
	Borrowman, Dr Philip G., Galvelmore, Crieff,	1893
70	Boxill, Dr N. L., Buttalls, St George, Barbados,	1888
	Boyd, Dr J. St Clair, Chatsworth House, Malone Road, Belfast,	1887
	Brand, Dr Eden, 29 Ann Street,	1903
	Brewis, Dr N. T., 23 Rutland Street,	1883
	Brewis, Dr R. Adams, The West Gate, Dursley, Gloucestershire,	1888
75	Broad, Dr B. W., The Sanitorium, Cardiff,	1895
	Brodie, Dr T. Scott, Belhaven Terrace, Wishaw,	1900
	Brodie, Dr W. Haig, Battle, Sussex,	1881
	Bruce, Dr Alexander, 8 Ainslie Place	1887
	Buist, Dr J. W., 1 Clifton Terrace,	1877
80	Buist, Dr R. C., 166 Nethergate, Dundee,	1895
	Bunting, Dr W. Hartley, 74 Bruntsfield Place,	1900
	Burton, Dr Thomas J., Lonsdale, Bearsden, Glasgow,	1896
	Butchart, Dr C. A., 52 Leith Walk, Leith,	1894
	Cairns, Dr W. Murray, 67 Catherine Street, Liverpool,	1892
85	Calder, Dr H. L., 60 Leith Walk, Leith,	1882
	Callender, Dr D. A., 180 Ferry Road, Leith,	1901
	Callender, Dr D. M., Inverard, Inverleith Gardens,	1902
	Callender, Dr T. M., Inverard, Sidcup,	1896
	Cameron, Prof. James C., M.D., 941 Dorchester St., Montreal,	1888
90	Cameron, Dr John D., 2068 St Catherine Street, Montreal, Canada,	1899
	Campbell, Dr Alexander, 1 Clarendon Terrace, Dundee,	1885
	Campbell, Dr Malcolm, 17 Walker Street,	1900
	Carmichael, Dr Edward, 21 Abercromby Place,	1887
	Carmichael, Dr E. W. Scott, 32 Rutland Square,	1899
95	Carmichael, Dr James, 22 Northumberland Street,	1871
	Carruthers, Dr G. J. R., 4 Melville Street,	1901
	Cattanach, Dr J. G., 3 Alvanley Terrace,	1893
	Chiene, Dr George L., 23 Alva Street,	1899

		Date of Admission.
	Chipman, Dr W. W., 287 Mountain Street, Montreal, Canada,	1895
100	Church, Dr H. M., 36 George Square,	1875
	Clark, Dr A. W. G., 28 Braid Crescent,	1901
	Clark, Dr J. A., 4 Cambridge Street,	1887
	Cobbett, Dr C. N., 25 Church Row, Hampstead, London, N.W.,	1890
	Coromilas, Dr Georges P., 67 Minerva Street, Athens, Greece,	1894
105	Cox, Dr Joshua J., Cromwell Chambers, 38 Deansgate, Manchester,	1876
	Croudace, Dr J. H., Foregate House, Stafford,	1878
	Cullen, Dr G. M., 50 Minto Street,	1890
	Cumming, Dr A. S., 18 Ainslie Place,	1885
	Currie, Dr A. S., 81 Queen's Road, Finsbury Park, London, N.,	1882
110	Darling, Dr T. Brown, 13 Merchiston Place,	1884
	Darling, Dr William, 12 Antigua Street,	1900
	Davidson, Dr D. G., 9 Granville Terrace,	1892
	Davies, Dr E. T., 97 Shaw Street, Liverpool,	1887
	Dendle, Dr Frank, Overton House, Spring Grove, Isleworth,	1892
115	Deverell, Dr H. C., 12 Windsor Street,	1882
	Dewar, Dr M., 24 Lauriston Place,	1891
	Dickie, Dr J. T., 37 Lauriston Place,	1900
	Dickson, Dr George, 9 India Street,	1867
	Dickson, Dr George, 14 Ardmillan Terrace,	1901
120	Dobie, Dr D. Robertson, Charlesfield, Crieff,	1894
	Donald, Dr C. W., 28 Portland Square, Carlisle,	1895
	Douglas, Dr Carstairs, 2 Royal Crescent, Glasgow, W.,	1890
	Duncan, Dr A. J., 158 Nethergate, Dundee,	1879
	Duncan, Dr A. S., 9 Newlands Park, Sydenham, London, S.E.,	1890
125	Dunlop, Dr H. M., 20 Abercromby Place,	1884
	Dunsmure, Dr J., 53 Queen Street,	1876
	Eason, Dr John, 196 Newhaven Road, Leith,	1899
	Easterbrook, Dr A. M., Gorebridge,	1893
	Easterbrook, Dr C. C., Glengall, Ayr,	1892
130	Easton, Dr Thomas, 28 East Park Terrace, Southampton,	1894
	Eden, Dr T. Watts, 26 Queen Anne Street, Cavendish Square, London, W.,	1888
	Edington, Dr D. C., 4 Portland Place, Penrith,	1897
	Elder, Dr W. Nicol, 6 Torphichen Street,	1879
	Evans, Dr O. F., 71 Mulgrave Street, Liverpool,	1890
135	Farquharson, Dr J. D., 242 Westgate Road, Newcastle-on-Tyne,	1890
	Farquharson, Dr J. M., 2 Coates Place,	1894
	Faulkner, Dr Hugh, 20 Charlotte Square,	1902
	Felkin, Dr R. W., 48 Westbourne Gardens, Bayswater, London, W.,	1884
	Ferguson, Dr J. Haig, 25 Rutland Street,	1885
140	Ferguson, Dr P. J. H., 20 Leopold Place,	1900
	Ferguson, Dr R. T., Anstruther, Fife,	1895
	Finlay, Dr W. A., 50 Trinity Road,	1880
	Flett, Dr A. B., 60 George Square,	1903
	Forbes, Dr J. Christie, Ardveich, Liberton,	1898
145	Forde, Dr E. S., Dalry, Galloway,	1893
	Fordyce, Dr A. Dingwall, 15 Melville Street,	1899
	Fordyce, Dr William, 20 Charlotte Square,	1888
	Fothergill, Dr W. E., 13 St John Street, Manchester,	1894
	Forrester, Dr C. C., 3 Albert Terrace,	1898
150	Fowler, Dr Simson C., Juniper Green,	1892
	Fowler, Dr W. Hope, 5 St Vincent Street,	1900
	Fox, Dr James S., 6 Baldwin Street, St Helens,	1889
	Fox, Dr J. W., 18 Bernard Street, Southampton,	1887
	Fraser, Dr H. E., Royal Infirmary, Dundee,	1892
	Fraser, Dr J. Hossack, Fernfield, Bridge of Allan,	1895

		Date of Admission.
	Fraser, Dr J. Joyner, The Rowans, Avenue Victoria, Scarborough,	1880
	Fraser, Dr Nutting S., 205 Gower Street, St John's, Newfoundland,	1887
	Frost, Dr W. E., 6 Atholl Place,	1900
	Garbutt, Dr W. J., Bournbrook, Birmingham,	1897
160	Gardiner, Dr Frederick, 14 Rankeillor Street,	1900
	Gayton, Dr William, Bartram Lodge, Fleet Road, Hampstead, London, N.W.,	1885
	Gemmell, Dr J. E., 12 Rodney Street, Liverpool,	1885
	Gibson, Dr E. Arthur, 2 Queen's Crescent, Glasgow, W.,	1897
	Giffen, Dr J. T. M., 138 Boughton, Chester,	1892
165	Giles, Dr A. B., 4 Palmerston Place,	1891
	Gilmour, Dr T. F., Port Ellen, Islay,	1882
	Girvan, Dr Alexander, Whitehall House, Maybole,	1901
	Glegg, Dr R. Ashleigh, 4 Lynedoch Place,	1901
	Goldie, Dr W. Herbert, Auckland, New Zealand,	1897
170	Graham, Dr A., Curriebank, Currie,	1897
	Graham, Dr D. J., 26 Rutland Street,	1895
	Graham, Dr F. M., 16 Mayfield Gardens,	1894
	Graham, Dr J. Gibson, 17 Ashton Ter., Dowanhill, Glasgow,	1888
	Graham, Dr R. Balfour, Leven, Fife,	1893
175	Grant, Dr Lewis, Neston, Cheshire,	1896
	Green, Dr John L., 18 Wilton Road,	1902
	Greene, Dr T. W. N., Bella Vista, Kew Gardens, Carlow, Ireland,	1889
	Gregory, Dr W. H., North Bar Street, Beverley, Yorks,	1893
	Guthrie, Dr A. Cowan, 171 Constitution Street, Leith,	1888
180	Hall, Dr D. G., Woodlyn, Gatehouse-of-Fleet,	1900
	Hamilton, Dr J. R., Hawick,	1879
	Hamp, Dr J. Walton, Penn Road, Wolverhampton,	1886
	Hardie, Dr Mabel, Samaritan Hospital, Victoria Road, Glasgow, S.S.,	1902
	Hardie, Dr Thomas, 10 John's Place, Leith,	1870
185	Harlin, Dr Francis W., c/o Mrs J. B. Alexander, 66 Marchmont Road,	1900
	Harper, Dr R. A. J., Sheriffhall, Dalkeith,	1901
	Harvey, Dr Charles E., Kingswood, Sav-la-Mar, Jamaica, W.I.,	1889
	Harvey, Dr James, 7 Blenheim Place,	1891
	Haultain, Dr F. W. N., 17 Rutland Street,	1884
190	Havelock, Dr J. G., Sunnyside, Montrose,	1888
	Hay, Dr Henry, 19 Nelson Street,	1879
	Helm, Dr J. H., Ratho,	1888
	Helm, Dr R. Dundas, 13 Portland Square, Carlisle,	1892
	Helme, Dr G. Edgar, Gloucester House, Rusholme, Manchester,	1895
195	Henderson, Dr Alexander, 21 Pitt Street,	1891
	Herring, Dr Percy T., Physiological Laboratory, University of Edinburgh,	1899
	Hewetson, Dr J., Holmfield, Reigate,	1881
	Hindmarsh, Dr Edwin, Mozufferpore, Tirhoot State Railway, Bengal, India,	1895
	Hobson, Dr H. Overton, 38 Leinster Gardens, Hyde Park, London, W.,	1901
200	Hoggan, Dr Robert, Bessville, Liberton,	1894
	Holmested, Dr C. W., Tuxford, Newark, Notts,	1900
	Hooper, Dr J. W. D., 70 Collins Street, Melbourne, Australia,	1884
	Hughes, Dr H. L., Gwernllwyn House, Dowlais, Glamorganshire,	1894
	Hughes, Dr P. T., Baldwyn's Park, Bexley,	1895
205	Hunter, Dr George, 33 Palmerston Place,	1881
	Hutcheson, Dr J., 44 Moray Place,	1888
	Inch, Dr Robert, Gorebridge,	1887
	Inglis, Dr Elsie M., 8 Walker Street,	1901
	Jamieson, Dr Hugh, 13 Lauriston Place,	1889

		Date of Admission.
210	Jamieson, Dr James, 43 George Square,	1866
	Jamieson, Dr J. Boyd, 43 George Square,	1900
	Jardine, Dr Robert, 5 Clifton Place, Glasgow, W.,	1897
	Jeffrey, Dr John, Glen Bank, Jedburgh,	1901
	Johnston, Dr Robert B., 10 Cornwall Street,	1903
215	Johnston, Dr R. J., 1 Buccleuch Place,	1899
	Jones, Dr W. Llewellyn, 58 Thomas Street, Merthyr-Tydvil,	1903
	Keiller, Prof. Wm., 210 Levy Building, Galveston, Texas, U.S.A.,	1890
	Ker, Dr Claude, B., City Fever Hospital,	1894
	Kerr, Dr J. M. Munro, 28 Berkeley Terrace, Glasgow,	1894
220	Kerr, Dr J. W., 121 Trinity Road,	1901
	King, Dr J. K., The Glen Springs Sanitorium, Watkins, New York, U.S.A.,	1884
	Kirk, Dr Robert, Rowan Bank, Bathgate,	1887
	Krüger, Dr C. H., Main St., Wynberg, Cape Colony, S. Africa,	1899
	Kynoch, Professor Campbell, 8 Airlie Place, Dundee,	1892
225	Lackie, Dr James, 1 Randolph Crescent,	1889
	Laing, Dr J. H. A., 11 Melville Street,	1891
	Langwell, Dr H. G., 4 Hermitage Place, Leith,	1891
	Lee, Dr Herbert E., Gunnedah, N.S.W., Australia,	1892
	Leigh, Dr J. Dickinson, Rishop-Auckland, Co. Durham,	1886
230	Leith, Dr Robert M., Provincial Hospital, Port Elizabeth, Cape Colony, South Africa,	1896
	Linton, Dr John, 60 George Square,	1863
	Linton, Dr Simon, Kessingland, Lowestoft,	1887
	Littlejohn, Dr Harvey, 1 Atholl Crescent,	1890
	Lockhart, Dr F. A. L., 23 Mackay Street, Montreal, Canada,	1890
235	Low, Dr R. C., 87 Colinton Road,	1902
	Lucas, Dr Robert, Dalkeith,	1871
	Luke, Dr Thomas D., 95 Shandwick Place,	1901
	Lyle, Dr F. W., 97 Gordon Road, Ealing, London, W.,	1890
	Lyle, Dr R. P. Ranken, 20 Saville Road, Newcastle-on-Tyne,	1901
240	M'Call, Dr John, 9 Windsor Street,	1886
	M'Callum, Dr H., Kinloch-Rannoch,	1887
	M'Cann, Dr F. J., 5 Curzon Street, Mayfair, London, W.,	1896
	Macdonald, Dr Alexander, 42 Polwarth Terrace,	1898
	Macdonald, Dr Angus, 9 Rutland Square,	1897
245	Macdonald, Dr John, Marathon House, Cupar-Fife,	1902
	Macdonald, Dr W. Fraser, 16 Buckingham Ter., Glasgow, W.,	1884
	M'Gibbon, Dr John, 22 Heriet Row,	1902
	MacGregor, Dr A. V., Durham House, Hartlepool,	1895
	MacGregor, Dr Donald, Friar Bank, Jedburgh,	1900
250	Macgregor, Dr G. S., 2 Burnbank Terrace, Glasgow W.,	1888
	MacGregor, Dr Jessie M., 8 Walker Street,	1901
	M'Ilwraith, Dr Kennedy C., 39 Carlton St., Toronto, Canada,	1901
	Mackay, Dr George, 74 Bruntsfield Place,	1879
	Mackay, Dr W. B., 23 Castlegate, Berwick-on-Tweed,	1899
255	Mackenzie, Dr R., Napier, Nairn,	1887
	Mackenzie, Dr T. C., Morningside Royal Asylum,	1900
	M'Kerron, Dr R. Gordon, 1 Albyn Place, Aberdeen,	1896
	Mackie, Dr George, Boyd's Lodge, Malvern, Worcestershire,	1900
	Mackin, Dr Patrick, 12 Ingestre St., Wellington, New Zealand,	1895
260	Mackness, Dr G. O. C., Fort Street House, Broughty-Ferry,	1887
	Maclagan Dr D. W., Cornwall Street, Taranaki, New Zealand,	1901
	M'Larty, Dr Malcolm, 7 Bellevue Place,	1900
	M'Lean, Dr Archibald, Crosshouse, Kilmarnock,	1890
	Maclean, Dr Ewen, J., 12 Park Place, Cardiff,	1902
265	Macmillan, Dr John, 48 George Square,	1897

		Date of Admission.
	M'Murtry, Dr L. S., 1912 Sixth Street, Louisville, Kentucky, U.S.A.,	1889
	M'Nicol, Dr P. B., 10 Pitt Terrace, Stirling,	1902
	MacRae, Dr John, Lynwood, Murrayfield,	1893
	MacVie, Dr S., Chirnside,	1881
270	M'Watt, Dr John, Duns,	1879
	Macwatt, Dr R. C., 7th Bengal Cavalry, care of Messrs King, King & Co., Bombay,	1885
	Maddox, Dr Ralph H., I.M.S., Chapora, Saran, Bengal,	1887
	Malcolmson, Dr Alexander M., 34 Madeira Street, Leith,	1901
	Malcolmson, Dr Harold, No. 9 "C" Road, Mandalay, Burma,	1898
275	Manford, Dr J. Stanley, 70 Osborne Road, Newcastle-on-Tyne,	1900
	Marshall, Dr G. Balfour, 19 Sandyford Place, Glasgow,	1891
	Marshall, Dr William, Milnathort,	1884
	Martin, Dr Charles, Dagenham House, Newton Abbot, South Devon,	1892
	Martin, Dr J. W., Burnfoot, Cluden, Dumfries,	1887
280	Martine, Dr W. R., Weston, Haddington,	1896
	Matheson, Dr A. A., 41 George Square,	1887
	Matheson, Dr Roderick M., 41 George Square,	1897
	Matthew, Dr Alexander, Corstorphine,	1885
	Maurange, Dr Gabriel, 6 Rue de Tournon, Paris	1898
285	Melville, Dr Kenmure, 50 Comiston Drive,	1900
	Menzies, Dr David, 20 Rutland Square,	1877
	Messer, Dr Fordyce, Helensburgh,	1866
	Michael, Dr Gustave, 5 Cambridge Place, Chestergate, Regent's Park, London, N.W.,	1885
	Millard, Dr W. W., Middlefield House, Leith Walk,	1884
290	Miller, Dr Alexander, 1 Royal Terrace, Crosshill, Glasgow,	1902
	Miller, Dr W. H., 51 Northumberland Street,	1886
	Milligan, Dr D., 11 Palmerston Place,	1893
	Milne, Dr W. M., 14 Newington Road,	1898
	Mitchell, Dr G. B., 1 Skinner Street, Whitby,	1893
295	Mitchell, Dr R. M., 2 Gloucester Place,	1900
	Montgomery, Dr John, The Highlands, Balsall Heath, Birmingham,	1895
	Moorhouse, Dr J. Ernest, 1 Glebe Avenue, Stirling,	1892
	More, Dr James, Rothwell, Kettering, Northampton,	1880
	Morison, Dr Albert E., Wellington Road, West Hartlepool,	1888
300	Morris, Dr S. Glanville, Myrddin House, Mardy, Glamorganshire,	1894
	Moses, Dr O. St John, 8 Lansdowne Road, Calcutta,	1900
	Mowat, Dr John, 6 Buccleuch Place,	1884
	Mules, Dr P. Henry, Australasian Club, Melbourne Place,	1903
	Munro, Dr A. Watson, 183 Liverpool Street, Sydney, Australia,	1892
305	Munro, Dr J. Ramsay, Infirmary and Dispensary, Bolton,	1901
	Murray, Dr A. Lang, Killara, Sydney, N.S.W., Australia,	1889
	Murray, Dr D. R., 41 Albany Street, Leith,	1878
	Murray, Dr James, 1 Brandon Street,	1879
	Nairne, Dr J. Stuart, 141 Hill Street, Garnet Hill, Glasgow,	1889
310	Napier, Dr A. D. Leith, North Terrace, East, Adelaide, South Australia,	1878
	Nicholson, Dr H. Oliphant, 20 Manor Place,	1900
	Ogden, Dr O. Watson, 131 Sandyford Road, Newcastle-on-Tyne,	1900
	Ogilvy, Dr Stewart Grant, Fauldhouse,	1895
	O'Gorman, Dr Patrick W., 17th Bengal Infantry, Benares, N.-W. Provinces, India,	1899
315	Oliphant, Dr E. H. Lawrence, 23 Newton Place, Glasgow,	1885
	Orr, Dr John, Heather Lea, Clarendon Road, Eccles, Lancash.,	1887
	Orr, Dr W. Basil, 13 Braid Road,	1889
	Paterson, Dr G. Keppie, 19 Albany Street,	1882

		Date of Admission.
	Paterson, Dr G. W. Simla, 147 Bruntsfield Place,	1896
320	Patton, Dr W. Scott, I.M.S., 20th Bombay Infantry, Poona, India,	1901
	Pearson, Dr C. M., 17 Alva Street,	1902
	Peddie, Dr H. Anderson, 24 Palmerston Place,	1882
	Perigal, Dr A., New Barnet Herts,	1887
	Pirie, Dr John, 15 Ardmillan Terrace,	1888
325	Playfair, Dr John, 5 Melville Crescent,	1873
	Poole, Dr T. D., Aberdeen Cottage, Poulton-le-Fylde,	1890
	Porritt, Dr E. E., Wanganui, New Zealand,	1897
	Porteous, Dr J. Lindsay, 83 Warburton Avenue, Yonkers, New York,	1875
	Potts, Dr W. A., 160 Hagley Road, Edgbaston, Birmingham,	1897
330	Prentice, Dr W. H., 53 Dick Place,	1901
	Price, Dr A. W. Gordon, 9 Grange Road,	1890
	Price, Dr E. F. T., 1 Middleby Street,	1890
	Primrose, Dr Alex., 100 College Street, Toronto, Canada,	1887
	Pringle, Dr J. Hogarth, 172 Bath Street, Glasgow,	1886
335	Proudfoot, Dr Thomas, 30 Lauriston Place,	1884
	Rabagliati, Dr A. H., Whinbrae, Ben Rhydding, Yorkshire,	1903
	Rattray, Dr A. M. T., Portobello,	1869
	Reid, Dr J. M., 5 Ravelston Park,	1901
	Reid, Dr W. L., 7 Royal Crescent, Glasgow, W.,	1880
340	Reid, Dr W. Spence, Oakley, Kirkcudbright,	1880
	Rendell, Dr Herbert R., P.O. Box 606, St John's, Newfoundland,	1882
	Rhodes, Dr J. H., 315 Hagley Road, Edgbaston, Birmingham,	1898
	Richardson, Dr William, 66 Cotham Road, Bristol,	1888
	Ritchie, Dr A. Brown, 117 Boston Street, Hulme, Manchester,	1892
345	Ritchie, Dr James, 22 Charlotte Square,	1880
	Ritchie, Dr W. T., 9 Atholl Place,	1899
	Roberton, Dr Ernest, Auckland, New Zealand,	1887
	Roberts, Dr Ernest T., 75 Skipton Road, Keighley,	1890
	Roberts, Dr R. W., Cattybrook House, Cwmavon, near Port Talbot, South Wales,	1894
350	Robertson, Dr George, Braehead, Viewfield Place, Dunfermline,	1901
	Robertson, Dr Robert, 26 Royal Circus,	1897
	Robertson, Dr W. B., St Anne's, Thurlow Park Road, West Dulwich, London, S.E.,	1870
	Robertson, Dr W. G. Aitchison, 26 Minto Street,	1889
	Robins, Dr H., Sav-la-Mar, Jamaica, W.I.,	1893
355	Robinson, Dr H. Shapter, Talfourd House, 78 Peckham Road, Camberwell, London, S.E.,	1890
	Robson, Dr B. S., 66 Brighton Grove, Newcastle-on-Tyne,	1887
	Ronaldson, Dr T. R., 8 Charlotte Square,	1877
	Rosa, Dr Albert F., 28 Pitt Street,	1893
	Russell, Dr W., 3 Walker Street,	1890
360	Saleeby, Dr C. W., 3 Malta Terrace,	1902
	Sandstein, Dr Alfred C., Gesto House, Edinbane, Isle of Skye,	1898
	Saunders, Dr F. A., Grahamstown, Cape Colony, South Africa,	1885
	Schofield, Dr Linn J., Warrensburg, Mo., U.S.A.,	1893
	Scott, Dr T. R., Musselburgh,	1880
365	Secord, Dr E. R., 112 Market Street, Brentford, Ontario, Canada,	1902
	Shaw, Dr W. J., Cockburnspath,	1892
	Shearer, Dr Alfred, Newtown, N. Wales,	1898
	Simpson, Dr F. D., 14 Garscube Terrace, Murrayfield,	1900
	Simson, Dr Harry, 80 Brook Street, London W.,	1897
370	Slight, Dr J. D., 61 London Road, Leicester,	1898
	Sloan, Dr Allen T., 22 Abercromby Place,	1893

		Date of Admission.
	Sloan, Dr S., 5 Somerset Pl., Sauchiehall St. West, Glasgow,	1887
	Sloss, Dr William, Windsor, Sturt Street, Ballarat, Melbourne, Australia,	1902
	Smart, Dr David, 74 Hartington Road, Sefton Park, Liverpool,	1882
375	Smith, Dr G. H. Walton, Pendower, Oxford St., Paddington, Sydney, Australia,	1892
	Smith, Dr Gains T., 15 Church Street, Moncton, New Brunswick, Canada,	1891
	Smith, Dr James, 4 Brunton Place,	1891
	Smith, Dr John, Brycehall, Kirkcaldy,	1885
	Smith, Dr W. Ramsay, Central Board of Health, Adelaide, South Australia,	1892
380	Sneddon, Dr William, 58 Bonnygate, Cupar-Fife,	1888
	Somerville, Dr C. W., Glencairn, Dalkeith,	1902
	Somerville, Dr James W., 12 Abbotsford Road, Galashiels,	1902
	Somerville, Dr Robert, 12 Abbotsford Road, Galashiels,	1881
	Spalding, Dr William, Gorebridge,	1867
385	Spence, Dr R., St Ninians, Burntisland,	1878
	Spence, Dr William, Dollar,	1884
	Stephen, Dr W. A., Loftus-in-Cleveland, Yorkshire,	1894
	Stephenson, Dr W. H., 131 Rochdale Road, Harpurhey, Manchester,	1895
	Stevens, Dr John, 2 Shandon Street,	1894
390	Stewart, Dr J. S., 15 Merchiston Place,	1884
	Stewart, Dr R., 42 George Square,	1885
	Stirling, Dr R., 4 Atholl Place, Perth,	1892
	Story, Dr B. S., 6 Annfield Terrace, Annfield Plain,	1898
	Sturrock, Dr J. F., Arima, Broughty-Ferry,	1887
395	Sullivan, Dr John, 33 Braid Avenue,	1902
	Sym, Dr A. C., 144 Morningside Road,	1885
	Taylor, Dr David R., St Helen's, Ayton,	1896
	Taylor, Dr William, 12 Melville Street,	1868
	Taylor, Dr W. Macrae, 12 Melville Street,	1895
400	Teacher, Dr C., 8 Nile Grove,	1887
	Temple, Dr G. H., Ailanthus, Weston-super-Mare,	1888
	Tennant, Dr John, 39 University Road, Belfast,	1902
	Thatcher, Dr C. H., 8 Melville Crescent,	1877
	Thin, Dr Robert, 38 Albany Street,	1891
405	Thomas, Dr G. C., 34 West Hill, Sydenham, London, S.E.,	1899
	Thompson, Dr F. E., 20 Park Avenue, Montreal, Canada,	1902
	Thompson, Dr James L., Castlemaine, Victoria, Australia,	1894
	Thompson, Dr John A. Douglas, Barmeal, Port-William, Wigtownshire,	1902
	Thomson, Dr A. D. R., Musselburgh,	1877
410	Thomson, Dr John, 14 Coates Crescent,	1887
	Thomson, Dr J. Stitt, Greetwell Road, Lincoln,	1877
	Thomson, Dr T. J., 31 Morningside Road,	1902
	Thyne, Dr T. J., 2 Dean Terrace,	1887
	Tod, Dr John, 93 Ferry Road, Leith,	1892
415	Tough, Dr F. W. K., 17 East Hermitage Place, Leith,	1901
	Tristan, Dr R. J., 28 Carolgate, Retford, Notts,	1887
	Underhill, Dr C. E., 8 Coates Crescent,	1872
	Underhill, Dr Frederick T., 1373 Barclay Street, Vancouver, British Columbia,	1885
	Underhill, Dr T. Edgar, Dunedin, Barnt Green, Worcestershire,	1879
420	Vassie, Dr Alexander H., 98 Priory Road, West Hampstead, London, N.W.,	1891
	Vickery, Dr W. H., 1 Bristol Terrace, Beech Grove, Newcastle-on-Tyne,	1892
	Wade, Dr George, Melrose,	1893
	Walker, Dr A. Wallace, 24 Forth Street,	1886
	Wallace, Dr Abraham, 39 Harley Street, London, W.	1879

		Date of Admission
425	Watson, Dr B. P., Serpentine Villa, Largo, Fife,	1902
	Watson, Dr Douglas Chalmers, 22 Coates Crescent,	1897
	Watson, Dr P. H., 2 Victoria Square, Newcastle-on-Tyne,	1887
	Watson, Dr R. H., The Glebe, Hamilton,	1896
	Waugh, Dr John, 36 Finsbury Pavement, London, E.C.,	1881
430	Webster, Dr A. D., 5 Blacket Avenue	1881
	Webster, Prof. J. C., 706 Reliance Building, 100 State Street, Chicago, U.S.A.,	1889
	White, Dr A. L., Belhaven Villa, North Berwick,	1903
	Whyte, Dr J. Curtis, Stonefield, Canaan Lane,	1896
	Wilcockson, Dr G. Morton, Whitley Cross, Reading,	1893
435	Wilkie, Dr James, Selville House, Portobello,	1897
	Wilkinson, Dr George, 109 Park Road, Liverpool, S.,	1889
	Will, Dr J. C. Ogilvie, 17 Bon-Accord Square, Aberdeen,	1867
	Willcox, Dr F. Mayes, 3 Glengyle Terrace,	1902
	Wilson, Dr James, 53 Inverleith Row,	1889
440	Wilson, Dr T. D., 10 Newington Road,	1879
	Wise, Dr Robert, 5 Weston Park, Crouch End, London, N.,	1890
	Wood, Dr Thomas, 182 Ferry Road,	1886
	Wood, Dr William, 5 Roxburgh Street,	1892
	Woodside, Dr J. T., 5 Roden Ter., Woodstock, Belfast,	1898
445	Wright, Dr W. F., Bonnington Mount, Bonnington Terrace,	1887
	Yoe, Dr Richard T., 2103 Floyd Street, Louisville, Kentucky, U.S.A.,	1891
	Young, Dr H. C. Taylor, 209 Macquarie Street, Sydney, New South Wales,	1900
	Young, Dr Peter, 43 Heriot Row,	1859
	Young, Dr Peter A., 25 Manor Place,	1871

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TRANSACTIONS

OF THE

EDINBURGH OBSTETRICAL SOCIETY,

FOR SESSION LXIV., 1902–1903.

BOSTON MEDICAL LIBRARY

MEETING I.—NOVEMBER 8, 1902.

DR JAMES RITCHIE, *President, in the Chair.*

I. *The Treasurer* (*Dr Wm. Craig*) made his annual statement, which is given below:—

INCOME.

Balance from Session 1900–1901,				£458	5	2
Arrears,	£10	5	0			
Bank Interest on Deposit Receipts,	4	15	0			
Interest on Consols,	6	11	4			
Entrance Fees from 22 new Ordinary Fellows,	23	2	0			
Annual Contributions from 372 Ordinary Fellows,	93	0	0			
Composition for Life-Membership from Three Ordinary Fellows,	15	15	0			
Transactions sold,	7	9	9			
				160	18	1
				£619	3	3

EXPENDITURE.

Royal Medical Benevolent College,	£5	5	0			
Dr Graham, Shorthand Reporter,	9	9	0			
Commission to Collector,	1	9	0			
Journal of Obstetrics for Plates,	0	10	0			
Baird's Account,	0	3	3			
Frazer's Account,	0	14	0			
Door-keeper's Salary,	1	12	0			
Oliver & Boyd's Account for Vol. XXVII. of Society's Transactions (500 copies),	86	16	6			
Oliver & Boyd's Account for Printing Billets, Postages, etc.,	24	18	10			
Rent of Rooms at 5 St Andrew Square,	4	10	0			
Waterston & Sons' Account,	3	5	6			
The Secretaries and Editor for Postages,	0	8	6			
				£139	1	7
Balance to New Account,[1]				480	1	8
				£619	3	3

[1] Of this Balance the sum of £250, 10s. 6d. is invested in 2¾ per cent. Consols.

The accounts were audited by Dr Michael Dewar and Dr Keppie Paterson, and found correct.

Professor Simpson proposed a hearty vote of thanks to the Treasurer, which was unanimously agreed to.

II. The Society then proceeded to the election of Office-bearers for the present session, and the President announced the result as follows:—*President*, Dr James Ritchie; *Vice-Presidents* (*Senior*), Dr Haig Ferguson; (*Junior*), Professor Simpson; *Treasurer*, Dr Wm. Craig; *Secretaries*, Dr William Fordyce and Dr Lamond Lackie; *Librarian*, Dr Haultain; *Editor of Transactions*, Dr Lamond Lackie; *Members of Council*, Dr Milne Murray, Dr Berry Hart, Dr Brewis, Dr R. C. Buist, (Dundee), Sir Halliday Croom, Dr Michael Dewar, Dr Matheson Cullen, and Dr Moorhouse (Stirling).

III. The following gentlemen were elected Ordinary Fellows of the Society:—Alexander Miller, L.R.C.P., L.F.P.S. Glasg., 1 Royal Terrace, Crosshill, Glasgow; H. Faulkner, M.B., Ch.B., 20 Charlotte Square, Edinburgh; D. M. Callender, B.A., M.B., Ch.B., Inverard, Inverleith Gardens, Edinburgh; R. C. Low, M.B., Ch.B., 87 Colinton Road, Edinburgh; B. P. Watson, M.B., Ch.B., Royal Maternity Hospital, Edinburgh; John Macdonald, M.B., C.M., Marathon House, Cupar.

IV. PRESIDENTIAL ADDRESS.

By James Ritchie, M.D., M.R.C.S. Eng., F.R.C.P. Ed., F.R.C.S. Ed.

Fellows of the Edinburgh Obstetrical Society, in opening this, the 64th session of our Society, I desire to express my great appreciation of the high honour which you have conferred upon me in electing me to the position which I now occupy, also to

testify to you the great pleasure which it has afforded me to preside at our meetings during the past session, a pleasure which has been marred by two considerations only—the one relating to a memory, the other to a prospect—viz., the remembrance of the ability and eminence of those who have in the past so worthily occupied this chair has somewhat weighed me down with the responsibilities of the position; and also the prospect of this evening has cast a long shadow, if not a very dark one, extending from last November until now. Your kind consideration has invariably rendered the duties pleasant, and I venture to expect a continuation of the same forbearance.

Gynæcology has during the past thirty-five years made great progress. Pathology, one of the piers on which our practice is founded, is more of a science than formerly; it is still, however, far from being perfect, and there is abundant room for our Fellows, who may have time and opportunity, to work in the interests of humanity and of science. The work of Lord Lister, first in connection with antiseptic, and later with aseptic surgery, has lead to great advances in operative gynæcology, and we are proud to realise that in this department—that of operative gynæcology—Fellows of our own Society have, in no small measure, been leaders in the van of progress. We greatly admire the care, skill, resourcefulness and readiness of our operating gynæcologists, and those of our Society who do not operate are glad to avail themselves of the experience and skill of those who by frequent practice are qualified to render efficient help when it may be necessary. But it would be a mistake were we to consider that gynæcology is a science which finds its indications most frequently fulfilled by operative interference. As in the legal profession many of its most able and trusted members endeavour to keep their clients from that which is associated with risk and uncertainty—a law plea —so I suppose that most medical men are desirous if possible

to preserve their patients from the risks, uncertainties, and sometimes, alas, mutilations of operation. In medicine we have often to choose between two evils, and it does happen at times that operation is the lesser evil. There are diseases in which delay would be dangerous, and so soon as the diagnosis is made operation becomes a necessity; there are also conditions in which, although there may not be urgency, the only hope of cure lies in operation. When operation becomes a necessity the anxieties are lightened by the knowledge that it is to so great a degree free from pain, thanks to a former Fellow of this Society, and that the uncertainties of such interference are now so much less than they formerly were. But a large proportion of the diseases peculiar to women do not call for operation, and it is to this department of gynæcology and to the responsibilities of gynæcologists who do not operate, that I desire for a very short time to direct your attention.

The mere enumeration of some of the diseases included will show how wide the field is, viz.:—Various affections of the external organs of generation—pruritus, excoriations, ulcerations, herpes—urethritis, vaginismus—which in its milder forms is amenable to treatment without operation—vaginitis, acute and chronic—we have to bear in recollection, however, that some of the chronic cases are due to conditions of the endometrium which require operation. Amenorrhœa, dysmenorrhœa, menorrhagia—these are described as diseases, and certainly the second of them is at times a serious *dis*-ease, but "trouble springs not from the ground, nor pain from chance," they are in reality symptoms, the discovery of the cause of which is often difficult and at times impossible. Then there is a large group of ailments in connection with the menopause which call for both skill and patience. Displacements of the uterus, various inflammations of that organ, various diseases of the Fallopian tubes and of the ovaries (including that condition which used to be called ovarian irritation) pelvic hæmatocele.

There is also a considerable number of diseases during pregnancy, such as sickness, pyrosis, neuralgias, pressure symptoms, rheumatism of the uterus, etc., which belong as much to gynæcology as to midwifery.

The important relations of some of these diseases indicate to us how necessary it is that we should endeavour to make ourselves experts in the diagnosis of them all and in the treatment of most of them. The remembrance of errors, as well as of difficulties, enables me to speak with sympathy.

Although some of the more wealthy classes, at an early period of any ailment, seek, or are advised by their medical attendant to obtain the assistance of a specialist, the majority of patients are primarily dependent on, or prefer, their ordinary medical attendant, and the conduct of the case remains in his hands throughout its whole course.

In some diseases early diagnosis is of prime importance. For example, it is important to differentiate between an ovarian tumour and a subperitoneal fibroid. The comparatively early removal of an ovarian tumour before adhesions have formed diminishes the danger of operation; whereas uterine fibroids, if producing no troublesome symptoms and if not growing rapidly, especially when they occur about the climacteric, are, in my estimation, better left alone. It is of importance that an ovarian tumour which is first brought to notice because of symptoms arising in connection with twisting of the pedicle, should be diagnosed at once, because probably it is better that immediate operation be done. Perhaps in no disease is early diagnosis of more importance than in uterine cancer, and in few diseases is an early diagnosis more difficult, even to those who are most skilled. The symptoms of early cancer are not well marked, and even if the microscope be used as an aid in diagnosis the appearances are not always characteristic; for example, it is difficult to differentiate malignant adenoma from inflammatory changes. In carcinoma of the uterus it is a question whether

operation should be undertaken, unless the disease be seen and recognised at a very early stage, viz., at a time when the diagnosis is most difficult. In later stages it is possible that after a time, with increasing experience and with extensive removal of glands, as is now done in operations for cancer of the lower bowel, there may be more favourable results than hitherto. The question of operation for cancer of the uterus is not within the limits of my subject; but the relation of the medical practitioner to the early diagnosis of the disease comes within its scope, and the reasons for such early diagnosis raised the question of operation. But having said so much, I would not have it supposed that, while in my mind the whole question of operation for uterine cancer is still *sub judice*, there do not exist even advanced cases in which a palliative operation may be done with advantage. Each case must be considered on its own merits, the treatment to be determined by the kind of cancer and by its position. I remember an elderly woman who, when first seen, had a large cauliflower excrescence which nearly filled the vagina. She was exsanguine from loss of blood and other discharge, and was apparently suffering from septic absorption. As a palliative the growth was removed by means of the galvano-cautery. After a few weeks there was a marvellous improvement in her health and appearance, and contrary to expectation, for many years there were no symptoms. Ten years later she was suffering from inoperable cancer. As illustrations of the difficulty of the diagnosis of cancer uteri the following cases may be mentioned. There was recently recorded in the *Journal d'Accouchements* a case in which a portion of the cervix was excised, microscopical examination led to the diagnosis of malignant adenoma, and the recommendation that the uterus be immediately removed. The operation was refused, the cervix became covered with exuberant granulations, which condition was taken as an indication of the unwisdom of the refusal; nevertheless complete recovery took place, and was followed later by pregnancy, the birth of a healthy

child, and a normal puerperium. It is possible that the cervix may have been the seat of commencing malignant disease which was entirely removed at the time of operation, or there may have been an error in diagnosis. The other case is that of a woman who had been married many years; she was not aware of having ever been pregnant, but she had for a considerable time suffered from menorrhagia. The uterus was curetted, and microscopical examination led to the diagnosis of malignant disease. No further operation was done, the patient recovered and remains well, now some years after the curetting. In this case there are three possibilities: the portion examined may have been the result of conception with early abortion; or there may have been the commencement of malignant disease which was entirely removed by the operation; or there may have been a misinterpretation of the microscopical appearances.

While it is important that we should be able early and correctly to diagnose certain diseases, it is also desirable that we should be able to determine in what cases interference is unnecessary. It is well known how much comfort is afforded to a patient with marked retroflexion of the uterus by the reponing of the organ and inserting a suitable pessary—the sacral discomfort is relieved, the monthly loss is diminished, and in some cases sterility is cured. There occurs to my memory such a case, a nullipara who had been married many years, and by and by the family increased so rapidly that it seemed to those interested as if there might be too much of what had been longed for. But there are displacements which do not call for special treatment. I recall one case in which the displacement was not responsible for the symptoms complained of, and it did not require any treatment, nevertheless it was a source of great mental anxiety to the lady, because in a city in the south it had been described to her as serious and as requiring special treatment by mechanical means. In other cases it is the cause rather than the displacement which calls for treatment.

Then while we should have constantly in memory the possibility of reflex phenomena due to uterine troubles, we must be on our guard lest, having strong leanings towards gynæcology, we attribute to an error in the pelvic organs some symptoms which may have an entirely different cause—for example, pain in the left hypochondrium due to adhesions of an old gastric ulcer has been attributed to some supposed affection of the left ovary and treated accordingly without benefit, because due investigation into the history of the case had not been made.

Conversely, now that the appendix vermiformis occupies so very large a portion of the field of medical vision, it is well to bear in memory when we are dealing with a female patient that other organs in its neighbourhood may be the source of inflammatory trouble there. Some time ago a lady who had suffered from some inflammation in the right iliac region was sent to me from the country with the recommendation that the appendix should be removed. The history of dysmenorrhœa, menorrhagia, and bladder troubles of considerable duration, and the existence of inflammatory deposit in the right broad ligament, with an absence of thickening on external palpation, rendered it probable that the trouble had originated at the right side of the uterus. Ichthyol externally with the hot vaginal douche twice a day was followed by the entire removal of all the symptoms and signs and restoration to health of the patient.

It is important, although it is somewhat difficult, that we be constantly on our guard, in the practice of gynæcology as well as in other departments of medicine, against purely symptomatic treatment. I have vivid reminiscence of the scorn which one of my former teachers used to heap on those who, when a symptom was mentioned, were ready with the reply, "I know a cure for that." I have already mentioned three symptoms—amenorrhœa, dysmenorrhœa, and menorrhagia, and it is desirable that in relation to a case which may exhibit any of these symptoms, we should endeavour if possible to ascertain the

cause which may be present. Not infrequently the two latter symptoms co-exist. When we see a case of amenorrhœa with anæmia we naturally think of Blaud's capsules, or of iron in some form, but before venturing to give any advice it is necessary that we go carefully over the systems with the view of discovering the cause. We may fail to find an apparently sufficient one. There are several problems connected with the origin of these symptoms which require to be solved, and these problems offer important subjects for research by the Fellows of our Society. The relations of amenorrhœa and anæmia require elucidation; they may have a common origin, or they may be causally related to each other. Why are so many young domestic servants bloodless? Why do some anæmic girls continue to menstruate regularly, although scantily, whereas others have it early arrested? Is it the feeding that is wrong? Maids from the country are, as a rule, more richly fed in town than they were at home; many of them have the liver deranged, as evidenced by the presence of a small quantity of albumen in the urine and an excess of bile acids. In such cases treatment of the liver is usually followed somewhat quickly by recovery from the anæmia. This class is, however, only a fraction of the large number of cases of anæmia which we see, and is not necessarily associated with amenorrhœa. Is the want of pure air the cause? Often the sleeping apartment is small and dark, or in an area, and although many have good-sized bedrooms, they are not much out of doors; besides, the air of a large town is not so pure as that of the country. How far is the teapot to be blamed?

Notwithstanding all that has been said and written about dysmenorrhœa, it still presents difficulties in the elucidation of its cause. Some cases are cured only after operation; some persist notwithstanding operation; in many, the nervous system is chiefly to blame, in others, entirely so, and these latter are cured without operation by tonic treatment, fresh air and

exercise. The generative organs are subject to such extensive circulatory changes from physiological causes that they are liable to have the dilatation of blood-vessels passing on to a pathological condition. In women of nervous constitution, not only is the vasomotor system specially mobile, a condition which favours the production of excessive dilatation of vessels, but the nervous system is peculiarly sensitive to the effects of pressure on nerve-endings, including those endings of which we only become conscious when a pathological condition has been induced; for example, those in the heart, the intestines, the ovaries, etc.

In relation to copious menstrual flow a most important question has in each case first to be solved, viz.: What has been the custom of the individual as to amount of loss at each period, and what is her comparative state of health at its close? Some women have always had a considerable loss and they do not seem in any way to suffer; if so, no treatment is required. Other women, however, even after a comparatively small loss, are exhausted, they look bloodless, and it takes them days to recover; for these, treatment must be adopted. As menorrhagia occurs in connection with so many conditions, some grave, others not, it is an important symptom. Menorrhagia in young women is occasionally caused by chronic constipation, in some it arises from congestion of liver apart from alcohol, in some women it is due to alcoholic excess. Polypus, sub-mucous fibroids, flexions of uterus, sub-involution, endometritis, various affections of the cervix, ovaritis, may also cause it. As a woman approaches the climacteric, not infrequently the uterus is found to be large, and there is a copious flow at the periods or at some of them; in others there is no enlargement, but the more copious or irregular flow is probably the result of peculiarities in the capillary circulation in the uterus; at times an excessive dilatation corresponding to the flushings so commonly experienced in other parts of the body at that time of life. Menorrhagia may also be caused by

a somewhat early stage of uterine cancer. Such a symptom in a multipara about middle life with slight-coloured discharge between periods would be very suspicious. In all cases its occurrence demands careful investigation.

Probably I have said more than enough to impress on our minds the wideness of the field and the necessity for care and skill in diagnosis.

As to treatment, we are in a better position than those who preceded us, because, as I have already remarked, pathology has advanced and our means of diagnosis are better. We have also some new methods of treatment. The older ones, such as blood-letting—at least local blood-letting—and counter irritation might perhaps with advantage be more frequently employed than they are. Salines and other aperients have still an important place. Even in the department of non-operative gynæcology the recognition of micro-organisms as potent factors in the production of disease has led to improved methods. The value of rest in acute, sub-acute, and even in some chronic cases is more understood, conversely the value of exercise in other cases is more appreciated. Much more value is now attached to hygienic measures than formerly. Heat and cold are old therapeutic agencies, but their mode of action is better understood. The hot douche has now a much wider sphere of use. For scientific investigations on its physiological action we are indebted to Dr Milne Murray, my predecessor in this chair, and in consequence of a due appreciation of its mode of working we can use it with an amount of intelligence and confidence which was previously impossible. Formerly cold douches and enemata were recommended for the treatment of uterine hæmorrhage, and we would have feared to use hot douches for its arrest; now they are known to be invaluable in various conditions with hæmorrhage, sub-involution of uterus, menorrhagia at the climacteric, that at the commencement of influenza, etc. Possibly although these may hold their place in the treatment of hæmorrhage due to inflammations and sub-

involution this method may in other cases be displaced or at least aided by the internal use of adrenalin. I have found it very effectual in the dose of 20 ♏ three or four times a day, in limiting the flow in cases in which operation was unnecessary or inadvisable, for example in menorrhagia at the climacteric and in nervous patients with an excessively mobile nervous system. The glycerine plug, a not unimportant aid in reducing congestions, was not in use thirty years ago. Ichthyol is also one of the newer remedies, and a valuable one, for the treatment of chronic inflammations of the pelvic organs with inflammatory deposit. I have seen cases in which, although the ovaries had been condemned to ablation, the use of ichthyol externally along with hot douching twice daily resulted in the cure of very troublesome dysmenorrhœa and menorrhagia and the ovaries were preserved. Regarding the value of electricity there is still difference of opinion, but those most skilled in its use report very favourable results.

When I was about to enter on practice a friend warned me that probably I would make one of two mistakes: that I would either be stranded on purely scientific work, or that I would get into the whirlpool of practice to the exclusion of science. I trust that he did not mean that like Atalanta I would be so covetous of the golden apples that the race to a more important goal would be neglected; he indicated, however, that it was difficult to combine practice and scientific work. I acknowledge the difficulty, and remark that if we look around us we find that the type of mind of the scientific worker is, as a rule, very different from that of the man in practice. At the same time there are many examples of outstanding men in practice who have also been renowned as scientific workers, and our Society includes the names of men who are eminent in both departments. It seems to me a mistake, even a slander, to refer with thinly-veiled sarcasm to practical men as if they were empiricists, and to suppose that a man in practice cannot be scientific. He may not have time for original scientific research, but he may do all

his work in a thoroughly scientific spirit. Those who are in practice have the best opportunities for obtaining trustworthy scientific results. Experiments *in vitro* are rarely conducted under conditions similar to those which exist in nature; these come under the observation of the scientific medical or surgical practitioner. Both experimental and practical scientists have difficulties to face and fallacies to guard against, but I protest strongly against the idea that a practical man cannot also be scientific. Unfortunately, our practice must at times be empirical, because we cannot obtain solid scientific ground on which to build a theory. At times our practice is satisfactory, although the reason of the satisfactory result has not yet been found. It is desirable that we should have a scientific reason, a working hypothesis it may only be, for all we do. It is interesting and amusing to read some of the theories of those who preceded us. Through their failures our experience has been advanced, and, doubtless, our successors will look back with wonder on some portions of our theories and of our practice. Possibly, nay probably, some of our theories will become obsolete, as those of our predecessors have done; nevertheless, although like the mastodons, megatheria, and ichthyosauri of a byegone age, they may appear as crude monstrosities to a succeeding generation, let us remember that these played an important part in the economy of the time during which they existed. As to our theories,

> "What is it to the changeless truth that yours shall fail in turn?
> What if the o'erturned altar lays bare the ancient lie?
> What if the dreams and legends of the world's childhood die?"

Our Society is fortunate in having on its roll the names of so many who have made valuable contributions to the advance of gynæcology, and in having still in its membership those who have led and who are leading both in scientific and in practical work. It may not be in our power to obtain equal distinction

with them, but we may at least aim to do our work in a scientific spirit, in so far as the science of our day has advanced. We shall have the consolation that we are doing the best known for the cure or the alleviation of our patients.

> "The holiest task by Heaven decreed,
> An errand all divine,
> The burden of our common need
> To render less is thine."

We shall further have the pleasure of

> "A toil that gains with what it yields
> And scatters to its own increase,
> And hear, while sowing outward fields,
> The harvest song of inward peace."

It would contribute much to the weal of our Society, to the advancement of its aims, and to the progress of our science were our practical members to submit to us, in short papers, their interesting, peculiar, or difficult cases, or any authentic scientific observation, even if it be an isolated one. Many important observations and interesting cases are useless because unrecorded. Although many communications are greatly enhanced in value by an historical summary, such is not a necessity for the production of a useful paper. We may usefully discuss the subject, although the writer may not

> "Gather up the scattered rays
> Of wisdom in the early days,"

and inform us what Hippocrates or other old-world, or it might be new-world, man of renown has written regarding it. If we have many such short practical papers during the course of the session on which we have entered, its interest and usefulness will be augmented.

Professor Simpson proposed a vote of thanks to the President for his address.

V. THE TREATMENT OF ECLAMPSIA BY RAPID DELIVERY BY MEANS OF BOSSI'S DILATOR.

By Dr W. E. Frost, M.B., Ch.B., Physician, St Anne's Dispensary, Edinburgh.

The causation and treatment of eclampsia have for a long time past been the subjects of much controversy amongst obstetricians; and at the present time no definite conclusions have been arrived at on either point. Innumerable theories have been brought forward to account for the condition, but the majority of observers lean towards that which attributed the origin of eclampsia to a toxine circulating in the maternal blood. As to the origin of this toxine, opinions also differ. It occurs only in pregnant women, and therefore appears to be fœtal in origin. In some cases the liver is unable to destroy or break up this body, and elimination by the kidneys does not occur; hence it persists in the maternal circulation. Such is the view which now generally obtains. The certain cause of eclampsia being still problematical, empiricism in the treatment of the condition holds high rule, with the consequence that the results obtained in many cases are not satisfactory.

Roughly speaking, the lines of treatment followed may be divided into two groups—in one of which sedatives are administered, measures are employed to eliminate the toxine, while interference with the uterine contents is avoided; in the other, interference is advocated, and measures are also employed to eliminate the toxine and control the eclamptic seizures. Good results are claimed by those who employ one or other of these lines of treatment. But the fact remains that eclampsia is still a very fatal disease, and any procedure which claims to diminish its terrors deserves consideration.

In 1900, Professor Bossi of Genoa divised an instrument for the dilatation of the cervix. Amongst the indications for its use, he claimed that, in eclampsia, rapid evacuation of the uterine contents could be effected by its aid. Leopold of Dresden published reports[1] on its use in twelve cases of eclampsia. Dilatation of the cervix occupied from twenty to thirty minutes, and in no case was there laceration of the parts. In nearly all, uterine contractions commenced during the use of the instrument, and continued with increasing force into the third stage of labour. Neither labour nor the puerperium was complicated by hæmorrhage in any case. No mother died. Of the twelve children, seven were born alive, forceps having been employed in their delivery. Four had to be perforated, but all of those had died either before or during labour. Leopold considers that, in the treatment of eclampsia, Bossi's dilator will be found to be a most valuable instrument, and that eclampsia can no longer be regarded as an indication for Cæsarean section.

In the hope that they may be of some interest, I venture to publish the following notes on a case where this instrument was used for the first time in Edinburgh:—

I saw the patient, Mrs J., with Dr M'Donald Robertson, on the night of 6th September. She is æt. 40 years, 8-para, and was then eight months pregnant. Dr Robertson had been called in to attend her about 7 P.M. on the 6th September. She had been suffering from severe headache since 10 A.M., and a short time before his arrival had a convulsive seizure.

When he arrived he found her semi-conscious, her pupils were small, and reacted to light to a slight degree.

Labour pains had not begun. She had had two evacuations of the bowels, and had passed urine several times during the

[1] *Arch. f. Gynæk.*, Bd. lxvi.; *Centralbl. f. Gynæk.*, May 1902.

day, but the amount was small on each occasion. He administered a 1-gr. opium pill.

He was again summoned at 10.30 to see the patient, as a second fit had supervened; the unconsciousness was now pronounced, and the breathing laboured.

I arrived at 10.30 P.M., and just as I entered the room a third seizure occurred. It began by twiching of the eyelids; the mouth was drawn over to the left side; the head rolled from side to side; and the arms, trunk, and legs became convulsed in the order mentioned, the duration of the whole phenomenon being about one and a half minutes. Immediately it had passed away I found that the pupils were moderately small and did not react to light, the pulse rate 108, and tension high; temperature 102·4°, and respiration 30 per minute. I could find no trace of œdema, and owing to the patient having passed urine in bed, none was procurable for examination. Furthermore, as no suspicion of renal disease was entertained, the urine had not been examined previously. Abdominal examination showed the presence of a tumour reaching to a hand's-breadth below the xiphi-sternum. Vaginal examination revealed a soft os uteri, which was sufficiently patulous to admit the tip of the examining finger. Hot bottles were placed round the patient, and the skin was induced to act freely. However, as the patient was manifestly in a grave condition, more drastic measures were deemed necessary, and it was decided that emptying the uterus was the best procedure to adopt. As several vaginal examinations had been made, a long douche of 1 in 100 lysol was administered, and the vulva was then carefully prepared. The patient was now placed in the left lateral position and chloroform administered. Bossi's dilator was then introduced into the cervix, the shields having been previously removed from the prongs. Slow dilatation was continued till the index registered 3½ cms., when the instrument was withdrawn and the shields placed on the prongs.

Reintroduction was easily accomplished, and dilatation continued till the index registered 9½ cms., when the instrument was finally removed. Till 8 cms. were registered, resistance to the action of the dilating screw was small, but when this point had been reached it gradually became so great that, when 9½ cms. was indicated, further dilatation required such force that it was feared tearing up the cervix might result, and hence the instrument was withdrawn. Thirty-five miuutes were occupied in reaching this stage. Vaginal examination made at this point showed that the cervix had been equally dilated all round, but that a considerable rim remained. The application of forceps in preference to turning was determined on, because it afforded a greater probability of saving the life of the child, and the fœtal head could be made to act as an efficient dilator by slow traction on it, applied through the forceps. Owing to the fact that the head was above the brim and very movable, and that the cervix was not fully dilated, application of the instrument was by no means easy. Thirty-five minutes were expended in the delivery of the head, which was born with the occiput posterior. No attempt at long internal rotation had occurred, probably owing to the small size of the head. The natural powers completed the delivery of a living female child, which developmentally corresponded to an eight months' gestation. The hæmorrhage which followed the birth was slight in amount. The placenta was expelled in about ten minutes. The total duration of the delivery was about one hour, thirty minutes. I saw the patient again at 9.30 A.M. on 7th September. She was unconscious; her temperature was then 102°, pulse 106, and tension high. She had had two severe eclamptic seizures in the interval, one at 5 A.M. (three and three-quarter hours after delivery), and a second at 7.30 A.M. The duration of both was over two minutes. The hot pack was employed, and profuse sweating resulted. The urine, which was drawn off, amounted to 6 oz. On examina-

tion, it was found to contain 3 grms. per litre of albumin, some blood, granules, and blood casts; the urea amounted to 1·2 per cent. The patient was seized with an attach at 10 A.M., two in rapid succession at 12.15 P.M.; the first of those was slight, the second severe. Again at 12.45, at 2.45, and at 3, slight seizures occurred. At 4 P.M. an enema was administered, and hot bottles placed round the patient. Recurrence of the attacks were observed at 6.40 P.M., 7 P.M., 7.15, and 7.20, each one becoming less and less severe, till the duration of the last did not exceed a few seconds. At 7 P.M. the temperature was 100·8°, pulse 100. At this time 8 oz. urine was withdrawn. At 9 P.M., when I again saw the patient, I found that the temperature had risen to 104·2°, and pulse to 120; the patient was profoundly unconscious, her pupils were pin-points, and gave no reaction to light.

By 11.15 P.M. the temperature had fallen to 101·2°, and pulse to 106. Next morning the temperature was 99·4°, pulse 86, tension high; the patient was still unconscious, but the pupils were large and reacted slightly to light. No eclamptic seizure had occurred since 7.20 the previous evening. The urine was again withdrawn, but unfortunately the quantity was not estimated. On examination, it was found to contain 0·75 grm. per litre of albumin, a trace of blood, while the urea had risen to 2·5 per cent. By 7 P.M. the patient showed some signs of returning consciousness, which manifested themselves by opening the eyelids when spoken to and slight movements of the arms and facial muscles when the face was flicked. On the morning of the 9th, patient's temperature was 98·4°, pulse 106. She was then sufficiently conscious to swallow a little milk. She had a trace of jaundice in the form of a yellow discoloration of the conjunctiva. An examination of the urine showed that it contained 0·5 grm. albumin per litre; the test for blood gave negative result. Gmelin's test for bile pigments showed that they were present. By evening the patient could

speak, but in a low faint voice. The jaundice was now very pronounced. She was taking milk freely. A good night's rest followed, and by morning the patient was fully conscious and interested in her surroundings. The jaundice was still very marked. Temperature 98·4°, pulse 106. The urine contained 0·5 grm. albumin per litre, and was greenish in colour. Gmelin's test was very easily demonstrated.

The subsequent history of the case does not call for detailed description. The jaundice disappeared four days after its onset, and on this day the evening temperature rose to 100·4°, and pulse to 108. Subsequent to this both became normal, and have remained so. Owing to the exhaustion produced by the eclamptic seizures, and to the restricted diet on which the patient was necessarily placed, her convalescence was slow. She left her bed twenty-five days after her delivery, and since then has gradually recovered her strength. At present she is sufficiently well to undertake all her domestic duties. The infant has also progressed favourably. Examinations of the urine from time to time always demonstrate the presence in it of minute traces of albumin; the specific gravity varies from 1018 to 1022. At present there are no signs of œdema on any part of the body, nor is there any cardiac hypertrophy.

The onset of the eclamptic seizures appears to be due to the presence of an unsuspected kidney lesion; further confirmation of this view is afforded by the persistence of the attacks for eighteen hours after delivery of the child. With the exception of 1 gr. of opium, which was administered before my arrival, no sedatives were employed in the treatment. If the toxine which produced this disease is due to the presence in utero of a fœtus, removal of the latter as rapidly as possible, together with treatment directed towards freeing the maternal circulation from the toxic body then present in it, should be sufficient to control the eclamptic seizures. It was on this

principle I acted in dealing with this case. The administrations of opium, chloral, chloroform, thyroid extract, etc., tend in my opinion to lead to wrong conclusions as to the part played by rapid dilatation of the cervix and delivery of the child in cases of eclampsia.

VI. ECLAMPSIA WITH RAPID DELIVERY BY MEANS OF BOSSI'S DILATOR.

By Professor A. R. SIMPSON, M.D., D.Sc.

WHEN I showed a Bossi dilator to the Society last session I stated that I had only had occasion to test it in some gynæcological cases, in which it was used without the sheaths on the points for dilating the cervix in the same way as one uses the Ellinger instrument and its modifications. In this way it has from time to time been employed very satisfactorily.

Within two days of the time when I took over the service in the Maternity, two cases of eclampsia were admitted. In one, a seven months primipara, labour was already in progress and no interference with the process was indicated. The child was born alive, but survived only three days. The mother made a rapid recovery.

The second case was a much more serious and difficult one, and I give it here as it has been recorded by the house-surgeon, Dr R. C. Low, James Scott Scholar.

M. G. from D. Poorhouse, unmarried, i-para, age 18. Admitted to Royal Maternity on 3rd November 1902.

History.—For some days before admission patient had not been feeling very well. She complained of headache, which was not very severe, but she was still going about as usual. Within the last fortnight she also noticed that her feet and ankles were swollen, and that there was a fulness below the eyes. On the forenoon of Monday, 3rd November, patient

suddenly had a fit. This was succeeded by a series of fits at intervals. A doctor was sent for, and he, recognising the condition, used means to try and subdue the fits before sending her into hospital. But as the fits, which had stopped for a time, became worse in the afternoon, the Poorhouse authorities had her immediately conveyed to the Maternity Hospital, where she arrived about 6 P.M. She had three or four fits on the way up in the cab.

State on Admission.—On admission patient was quite unconscious. She was breathing loudly; the mouth was full of brownish frothy fluid, and the face was swollen and puffy. She was continually tossing about, sometimes struggling violently. There was slight œdema of feet and legs.

On *Inspection* the abdomen showed the usual signs of advanced pregnancy. On *Palpation* the fundus uteri was felt about three fingers' breadth below ensiform cartilage and slightly to the right of the middle line. The breech of child was felt to be uppermost and the back towards the left side. The fœtal heart was heard beating feebly midway between umbilicus and left anterior superior spine.

Per vaginam.—Orifice admits two fingers; vaginal walls moist and rugose; cervix prominent and soft; os barely admits one finger. Head of child felt through anterior fornix.

There were no uterine contractions occurring.

About ℥iij of urine were drawn off by the catheter and showed a very marked reaction on boiling and also on addition of pure HNO_3 in the cold. Esbach's albuminimeter showed that it contained 28 grms. of albumin per litre.

During the examination of the patient $CHCl_3$ was administered.

At 6.30 a fit occurred, which lasted about two minutes. There was first tonic contraction followed by clonic contraction of all the muscles causing twitching of the face, conjugate deviation of eyes to one side and jerking of the arms and legs.

The patient got gradually more cyanosed, and a peg was placed between the teeth to prevent biting of the tongue. The jerkings gradually became slower, and the fit passed off. For some time after the fit, the breathing was very stertorous. ¼ gr. of morphia was given hypodermically.

At 7 P.M. 2♏ of croton oil in some sugar were placed on the back of the tongue, and another ¼ gr. of morphia was given hypodermically.

At 7.30 a pint of normal saline solution was transfused under both breasts.

The patient's pulse was rapid; the temperature 100° F. The fœtal heart sounds were not easily audible.

At 8.40 patient was chloroformed, and Professor Simpson dilated the cervix gradually with Bossi's dilator, which was first introduced without the detachable sheaths at the ends. Occasional hot douches of lysol were given to help dilatation. In twenty minutes the os was fully dilated. There was practically no bleeding, and the membranes having burst when dilatation was nearly completed, at 9 P.M. axis-traction forceps were applied and traction made at intervals. At 9.35 the head was born; and in a minute or so the whole child, which was a female weighing about 6½ lbs., was expelled.

The child was pale and limp. It made no attempts at respiration. Its mouth was cleared out. It was put in hot and cold baths alternately. Hypodermic of strychnia given. Rhythmic pulling on tongue was tried and also artificial respiration by Schultze's method. These measures were persevered in for about half an hour, but were useless.

Immediately after birth of the child the $CHCl_3$ was withdrawn. The hand was kept on the fundus and placenta expelled by uterine effort at 9.43. Immediately after that patient had a very bad fit lasting about four minutes. She was very much cyanosed, and artificial respiration was had recourse to. The

vagina was then packed with iodoform gauze after douching with lysol. Catheter passed but bladder empty.

11.10 P.M.—Another fit.

12.55 P.M.—Another fit. Conjugate deviation of eyes to left; pupils were pin point at this time.

4th Nov., 1.50 A.M.—Enema of chloral 20 grs. and potassium bromide 40 grs. in water was administered.

2.40 A.M.—Another fit.

2.55 A.M.—Saline transfusion under both breasts, one pint.

4.10 A.M.—Patient removed from labour room into ward. She was still somewhat restless but breathing more easily. Pulse 128, temp. 102° F.

5 A.M.—Another fit lasting two minutes.

5.30 A.M.—As croton oil had produced no motion, a soap and water enema was given, but with no result. Medicinal enema of chloral 20 grs. and pot. brom. 20 grs. was administered.

7.20 A.M.—Another fit lasting three minutes.

12 NOON.—Packing removed from vagina. Boracic douche given; no hæmorrhage. Temp. 101·4°, pulse 120. The patient could now swallow, and took about 3 oz. of milk.

No fits till 6 o'clock. Another fit at 9 o'clock.

Catheter passed and 16 oz. of urine drawn off.

At midnight 20 grs. of chloral were given by mouth.

5th Nov.—Patient was now swallowing milk, which was given about 3 oz. every two hours.

6 A.M.—ʒi Henry's solution.

9.10 A.M.—Another fit.

10 A.M.—ʒij Henry's solution.

12 NOON.—Thirty grs. bromide of potassium were administered. Patient was also put on pot. acet. gr. x and tinct. digit.

5 ♏ 6-hourly. During the day patient had six fits at intervals of about four hours.

At 4 P.M. four grs. of thyroid extract were given.

At 6 P.M. there was a fit lasting three minutes.

At 10 P.M. ℥ij Henry's solution given. Turpentine and castor oil enema given, and turpentine stupe applied to abdomen as there was a good deal of gaseous distension of the bowels.

At midnight patient recovered consciousness and spoke for the first time. During all that day patient was able to swallow milk at intervals.

6*th Nov.*—As bowels had not moved yet, at 1 A.M. 60 grs. pulv. jalapæ co. were given, and a soap and water enema with ℥i turp. and ℥ij castor oil administered, but with no result.

At 8 A.M. ℥ij castor oil were given by mouth, and at 11 A.M. the bowels moved for the first time since admission. Ten minutes later patient had a fit and another one about fifteen minutes after that. Since then the patient has had no more fits. She is kept entirely on milk. She got 30 grs. potassium bromide at night as she was very restless.

7*th Nov.*—Patient passed urine for the first time, it having always been drawn off previously.

8*th Nov.*—Up to present time patient has gradually improved. She is being douched four times daily with boracic douche. The uterus is now only about two inches above the pubis. There has been no recurrence of the fits since the third day after the confinement, but the patient is still very slow in answering questions, and does not seem to realise exactly where she is.

12*th Nov.*—Patient had eighteen fits altogether after admission. Though she still complains of headache, she is

now making a good recovery. This morning her temperature is 97° and her pulse 84; whilst the urine is entirely free from albumen, as appears from the following record:—

URINE.

On admission. *3rd Nov.*		albumen 24 grms.	per litre	Casts found.
		urea 5 grs.	per ℥i	
4th Nov.	morning	alb. = 8 grms.	per litre	16 oz.
„	evening	alb. = 3 grs.	per ℥i	
5th Nov.	morning	alb. = $\frac{5}{8}$ grm.	per litre	Casts found.
		urea = 5 grs.	per ℥i	
„	evening	alb. = $\frac{1}{8}$ grm.	per litre	
		urea = 3 grs.	per ℥i	
6th Nov.		alb. = $\frac{1}{8}$ grm.	per litre	
7th Nov.		alb. = $\frac{1}{8}$ „	„ „	
8th Nov.		alb. = $\frac{1}{4}$ „	„ „	
9th Nov.		alb. = $\frac{1}{8}$ „	„ „	
10th Nov.		alb. = trace		
11th Nov.		no albumen		
		urea = 3 grs.	per ℥i	

The case interests me not only as the first in which I have had the opportunity of using the Bossi Dilator, but as showing that it is applicable in a case where the indication for delivery was urgent, and the uterus was as yet inactive, the os and cervix being still so narrow that the instrument with the shields on the points could not be passed. The claim that Bossi has made for the instrument that it acts not merely as a mechanical dilator, but as a stimulant to uterine action, was amply confirmed in this experience as it has been by Leopold, Knapp, and others, who have made trial of it. The uterine activity that was awakened during dilatation was kept up afterwards during the forceps extraction, and sufficed for the expulsion of the body and for the completion of the third stage.

P.S.—I was led to make this hurried communication as my former house-surgeon, Dr Frost, James Scott Scholar of 1900, had given notice on the Society's billet of an interesting account of a case of eclampsia in which he had made

successful use of Bossi's dilator in September. Since the meeting, Dr J. W. Ballantyne, assistant physician to the Maternity, has been able to satisfy himself of the value of the instrument by its employment in yet another eclamptic case.

MEETING II.—DECEMBER 6, 1902.

Dr JAMES RITCHIE, *President, in the Chair.*

I. The following lady and gentlemen were elected Ordinary Fellows of the Society:—Mabel Hardie, M.B., Ch.B. Glasg., Leith Hospital; John Sullivan, M.B., Ch.B., Leith Hospital; C. W. Somerville, M.B., Ch.B., Leith Hospital; F. M. Willcox, M.B., C.M., D.Ph., 3 Glengyle Terrace; J. Tennant, M.A., M.B., C.M., Queen's College, Belfast.

II. *Professor Simpson* showed—(1) A specimen of EXOMPHALOS from a primiparous woman in which the presentation had been cephalic instead of as is usual the exomphalic mass presenting; (2) A CASE OF ANENCEPHALIC FŒTUS sent by Dr Beattie of Pitlochrie. There was also some amount of spine bifida. The patient had had ten children, and there had been one other case of anencephalos (the fifth labour). There was an unusual amount of liquor amnii present; (3) THREE CASES OF FIBROID TUMOUR (*a*) from an unmarried woman, æt. 33. When first seen there was a sloughing mass protruding from the vulva which was removed. Some time later the whole uterus was removed. On splitting up the uterus a secondary tumour was found—a mucous polypus growing from the endometrium. A depressed scar was seen on the tumour at the seat of separation of the sloughing mass; (*b*) from a woman who had had three children

—the last in 1893. Total extirpation had been performed. The cystic degeneration of the ovaries so unusually associated with uterine tumours was evident in this case; (*c*) from a case seen with Dr Easterbrook at a time when the patient was suffering from peritonitis. When seen on a later occasion the diagnosis of the case was a little difficult because there was distinct fluctuation through the vaginal roof. On opening the abdomen, behind the uterus the left ovary was found, the seat of cystic degeneration. As the bowels could not be got to move and a dangerous degree of tympanitis was setting in, it had been necessary on the sixth day after the operation to reopen the abdomen. There was general peritonitis and the cavity contained a quantity of bloody serum. A kink was found in the sigmoid flexure where it had become adherent to the left extremity of the wound in the pelvic roof. This was separated, the cavity was washed with weak boracic acid, and the patient made a rapid recovery; (4) Two CYSTIC OVARIES removed from a woman, æt. 19. Three years previously the patient's sister, a married woman, had had a double ovariotomy performed on her.

III. *Dr Hart* showed—(1) CALCULUS removed from pelvis of kidney in a patient with a deformed pelvis. There was a large right kidney pus in the urine and a very low percentage of urea. The patient made an excellent recovery; (2) Two OVARIAN TUMOURS which were very adherent, the patient having suffered from several attacks of pelvic peritonitis during the last few years; (3) A HÆMATO-SALPINX (tubal mole).

IV. *Dr Scott Macgregor* showed—(1) An OVARIAN TUMOUR removed from a woman, æt. 26; (2) A CANCEROUS UTERUS removed from a woman, æt. 36.

V. *Dr Lamond Lackie* showed a SOFT UTERINE FIBROID from a woman, æt. 40. The patient had had a small tumour in her

abdomen for years. During the last few months it had become rapidly larger. It was so soft that it was thought at first to be ovarian. It was removed by the subperitoneal method, and the cervix was left behind.

VI. *Dr Fordyce* showed an EXTRA-UTERINE GESTATION SAC.

VII. NOTES ON TWO CASES OF CANCER OF THE CERVIX AT THE FIFTH MONTH OF PREGNANCY TREATED BY PANHYSTERECTOMY: WITH REMARKS ON THE TREATMENT OF CANCER DURING PREGNANCY.

By N. T BREWIS, F.R.C.S. Ed., Assistant Gynæcologist, Edinburgh Royal Infirmary.

IN this short communication I wish to place on record two cases of cancer of the cervix uteri, operated on at the fifth month of pregnancy. In both cases the entire uterus, its contents and appendages, were removed by the abdominal route, the first case being operated on in October 1898, and the second in June 1900. I also desire to make a few remarks on the surgical treatment of cancer of the cervix during pregnancy.

CASE No. I. is that of Mrs D., who at the time of this record was 36 years of age, had been married fifteen years and had given birth to nine children, the youngest being sixteen months old. She came under my care in October 1898, complaining of pain in the lower part of the abdomen, and of a thick, yellow, foul-smelling discharge. The discharge had troubled her for twelve years, but it was only during the last year that it had become offensive. Menstruation had always been regular, the flow being free, and usually lasting a

week, but like the inter-menstrual discharge, it had smelt offensively for the last twelve months. It had also become black in colour. On the last three occasions the patient had lost very little, being ill one day only. The flow during the first and second periods was free, and pregnancy was not thought of. Two of her labours were instrumental. The shortest interval between two confinements was sixteen months, the longest two years and five months.

On *physical examination* the uterus was found enlarged to the size of a five months' pregnancy. The anterior lip of the cervix was much increased in size, hard in consistence, and irregular in shape. A portion submitted to microscopical examination was found by Dr Muir to be epitheliomatous. The nature of the case being manifest, preparations for operation were made without delay, and on 19th October 1898, the patient was placed on the table in the Trendelenberg position, and the abdomen opened in the middle line. The ovarian vessels and those of the round ligaments were first ligatured, then the anterior layer of peritoneum was divided transversely and the bladder pushed down. In doing this a finger went through the soft uterine wall, and liquor amnii gushed out. The vaginal roof was next opened in front and behind, and clamps, introduced *per vaginam*, placed in the sides of the cervix, securing the uterine vessels. After which, the cervix was cut out, and gauze having been placed between the clamps, the anterior and posterior flaps of peritoneum were stitched over them with catgut. The abdominal wound was sutured in layers with catgut.

CASE No. II.—Mrs P., aged 30, the mother of six children, the youngest being three years old. Since the birth of her youngest child she has had three miscarriages, the last having occurred in August 1899. She came to me in June 1900, complaining of hæmorrhage of a week's duration, of a yellowish,

foul-smelling discharge, and of a pain in her left side, of five months' duration, felt most acutely during walking. The discharge had been present for a year, but only during the last five months had it become yellow and fœtid. Her menstruation was of the twenty-eight day type, lasting from seven to eight days, and the quantity was large. Her last period was in January. Her labours had all been normal and her recoveries good. She had nursed all her children and had menstruated regularly while doing so. During the last five months the urine had dribbled away when she walked. The patient was curetted in August 1899 for menorrhagia.

On *physical examination* the uterus was felt enlarged to the size of a five months' pregnancy, the vagina was very moist, and from the posterior lip of the cervix a pear-shaped, rough, sloughing mass was felt. The smell was very offensive. This pear-shaped mass I removed and sent to the College of Physicians' Laboratory, where it was pronounced to be an epithelioma.

Panhysterectomy was performed on 6th June 1900. During the preparatory scrubbing of the vagina a stream of thick blood gushed out of the external os. This was stopped by closing the os with catgut stitches. The cervix was then ringed and the pouch of Douglas entered through the posterior fornix. The anterior surface of the cervix was next cleared and the uterine arteries clamped. The abdomen was then opened in the usual way. The ovarian and round ligament vessels were secured, the peritoneum divided in front, and pushed down with the bladder. Then the cervix was cut out from between the clamps, gauze placed between them and the peritoneum stitched over them. The abdominal wound was then closed in the usual manner. Both patients made uninterrupted recoveries. I examined them last month (November 1902) and found no evidence of return of the disease. In both cases the vaginal roof presented no hardness or fixity. The scar in both felt absolutely healthy.

We will consider the surgical treatment of pregnancy complicated by cancer of the cervix under two heads.

I. *Those cases in which the disease is apparently confined to the uterus,* and which offer a reasonable hope that by surgical means the mother may be cured of the disease, and that the child if it has reached a viable age, may have its life saved. The treatment must be radical and prompt. As soon as the disease is recognised, operative measures must be instituted. The rapidity with which cancer advances during pregnancy absolutely forbids delay. The life of the child, if it has not reached a viable age, is not to be considered; no postponement is justifiable, even though the child may be within a short distance of viability. To save the mother's life is what we strive for during the earlier months; to save both mother and child is what we wish for during the later months.

(1) *In the earlier months.*—The operation which we would perform to secure this object during the first three or four months of pregnancy would be vaginal hysterectomy.

Abdominal hysterectomy is a more difficult and a more serious operation, and statistics show that the results are not nearly so good. During the early months of pregnancy vaginal hysterectomy is an easy operation, for the tissues are soft and elastic, and the uterus, after the cervix has been freed and the peritoneum opened, can be drawn down easily and the vessels secured without difficulty.

The abdominal operation could only be advocated in the hope that it might be more radical, in the hope that perhaps infected glands might be removed; but I feel that whenever the glands are involved the case is better left alone, as it is then no longer one in which a radical operation can be performed. I operated recently by the abdominal method on a patient with cancer of the cervix because a gland was felt enlarged, but, after tying the internal iliac and the ovarian arteries, opening

up the broad ligaments and removing several infected glands, I was greatly disappointed to discover a chain of enlarged glands extending upwards along the side of the right ureter as high as the kidney. I may say in passing that I doubt very much if even in non-gravid cases abdominal hysterectomy has a place in the treatment of cancer of the cervix.

(2) *In the later months.*—While to my mind there is no question as to the correct technique to be followed in the early months of pregnancy, there is considerable doubt as to the best method of treatment in operable cases in the later months. Here again the question for decision is whether the abdominal or vaginal is the better route. Both operations narrated in this paper were done by the former method. One was already familiar with the technique and felt confident of being able to complete the operation satisfactorily, and for that reason removal of the uterus and its contents through the vagina was never seriously considered. The experience of recent operators, however, is almost entirely in favour of the vaginal method, not only in the earlier but also in the later methods of pregnancy, and if I should meet with a case of operable cancer occurring in the later months I should give that experience the full consideration it demands.

The abdominal operation may be said to compare unfavourably with the vaginal in three particulars, namely:—

(*a*) The abdominal incision.

(*b*) The danger of subsequent peritonitis from infection of the peritoneum by contact with the diseased cervix; and

(*c*) The risk of implantation of cancer cells on healthy tissues.

The abdominal incision, which in the months of advanced pregnancy must be long, is in my opinion the one weak point in the operation. Its weakness lies in its length, and there is no way of overcoming this. To bring a large uterus through

an abdominal opening requires a long incision, though this can be somewhat lessened by introducing before the operation a cannula through the cervical canal into the bag of membranes and drawing off the waters. The objection to a long abdominal incision is, however, one of the minor importance, provided the more vital steps of the operation are satisfactory.

Fouling of the peritoneum by contact with the diseased cervix, though mentioned as a risk, should really not exist in the hands of a careful operator. During the process of cleansing the vagina prior to the operation he will endeavour to remove all infective material with the knife, scissors, curette or cautery, and will thoroughly disinfect the bared surfaces; and during the operation, before he reaches the stage when he lifts out the uterus, he will be mindful to pack off all the peritoneum with sterilised gauze, so that there will be no contact of the cervix with it. The same precautions will prevent any risk of implantation of cancer cells in healthy tissues.

At the fifth month, if the abdominal route is chosen, the uterus should be removed with its contents. Emptying the uterus beforehand takes time and adds to the risk. To reduce the size of the uterus is a slight advantage, but this reduction can, as already stated, be accomplished to a considerable extent by simply drawing off the waters before commencing the operation. In the later months when the child is viable, and we aim at saving the life of both mother and child, the latter should, if the abdominal route is preferred, be delivered by Cæsarean section. In such a case it would not be good practice to induce labour, deliver *per vaginam*, and then remove the uterus through the abdomen. This would lengthen the operation and add risk to the child. When the abdomen has to be opened it adds little risk and takes little time to deliver by Cæsarean section.

When there are no complications the removal of the uterus during the later months of pregnancy by the abdominal route

becomes an operation of great simplicity on account of the absence of adhesions, the succulent condition of the tissues and the laxity of the ligaments. Fritsch, however, speaks unfavourably of the operation: he calls it difficult, bloody, and long. I cannot think that it is. From the experience of six hysterectomies which I have successfully performed during the later months of pregnancy, I can testify not only to the ease with which they were performed, but also to the small quantity of blood lost. After the child has been delivered the uterus contracts, and the uterine incision practically ceases to bleed. As regards the vaginal method of removing the uterus during the later months of pregnancy, the following are the points which make it easy:—

1st. The roomy vagina.

2nd. The fact that when the cervix has been ringed and the peritoneal cavity opened in front and behind, the uterus is easily drawn down for its ligaments are lax, and the body is so soft and elastic that it can be pulled down and stretched till its circumference is quite small. There appear to be no great difficulties nor dangers in the operation, and it is quickly performed.

Chrobak, Fritsch, Seiffart, Winter, Michelini, and doubtless others have removed the full-time uterus immediately post-partum for cancer of the cervix. Fritsch, who has had experience of both methods, speaks most enthusiastically of the vaginal one. In my opinion any advantage it may have consists in its greater rapidity. The rapidity with which the operation is performed is a matter of considerable importance, as the patients are usually in an anæmic, exhausted condition when they go on the table.

To help us to decide which is the better method, abdominal or vaginal hysterectomy, two other factors may be taken into consideration, viz., (1st) the method of delivery which is most sparing to the mother; (2nd) the method of delivery which is

preferable in the interests of the child. One of three methods of delivery may be adopted.

(*a*) Induction of labour. This method is not one which we consider with favour. Its tediousness, the danger of sepsis and the exhaustion which would attend labour in a woman already in a feeble condition make the method unsuitable.

Mertens, however, had a successful case, in which he brought on premature labour: delivery took place without trouble, and eight days later he extirpated the uterus by the vagina without any great difficulty.

(*b*) Delivery may be effected by cervical section *per vaginam*. This is a rapid method, and provided there is no hæmorrhage should not be exhausting to the mother. It would be the method of choice if followed by vaginal hysterectomy. The cervix is ringed and cleared, and the peritoneal cavity opened in front and behind. The uterine vessels having been ligatured, two stout clamps are pushed into the cervical canal and fastened on the anterior lip which is incised between the clamps. The membranes are then divided, and the child delivered by forceps or version. The cervical slit is then closed with catgut sutures, and the operation of removal of the uterus proceeded with.

(*c*) Delivery may be accomplished by abdominal Cæsarean section. This is also a rapid method; it is not attended by much loss of blood, and it is the one which I would adopt when it is to be followed by removal of the uterus by panhysterectomy.

In the interests of the mother there seems to be little to choose between delivering by abdominal Cæsarean section and delivering by vaginal cervical section, but in the interests of the child I think there can be little doubt that the Cæsarean method gives a more certain prospect of a live child being safely born, as there are not the dangers, small though they may be, which attend delivery with forceps or by version.

If we admit this conclusion, and admit that delivery by Cæsarean section involves no greater strain on the mother than cervical section, and further, that the operation of panhysterectomy is not attended by greater dangers or difficulties than vaginal hysterectomy, then we must conclude that if one method of removing a uterus in an operable case of cancer during the later months of pregnancy and of saving the life of the child is better than the other, that method is Cæsarean section followed by panhysterectomy. Among recent writers Pozzi almost alone supports this view. The majority favour vaginal hysterectomy. Olshausen even recommends that should Cæsarean section be necessary in the interests of the child, the uterus should be stitched up after removal of the placenta, and without amputation at the cervix be extirpated *per vaginam.*

II. *Those cases in which the disease has extended beyond the uterus,* and which afford no hope that the mother can be cured of the disease, but in which our efforts are chiefly directed to saving the life of the child.

While so much can be said for the vaginal route in operable cases of cancer, nothing whatever can be spoken in its favour in those cases where the disease is not limited to the uterus, for in such cases, from sepsis and hæmorrhage, delivery *per vias naturales* is dangerous.

The cervix does not dilate but tears, and the tear may extend into the lower uterine segment and be followed by fatal bleeding. Incising the cervix in several places may prevent rupture, and curettage of the diseased tissues followed by the application of powerful antiseptics may in some cases remove the infective material, but in a case far advanced this is barely possible, and the danger of sepsis must always be very great. Brook W. Wells says: "If labour at term occurs, over 30 per cent. succumb when delivery occurs spontaneously, many of these from rupture of the uterus, while about 50 per cent. die

when the aid of forceps or version or craniotomy has increased the traumatism and subsequent exhaustion, hæmorrhage, sloughing, and sepsis. About 40 per cent. of the children are born dead, and nearly all are of feeble vitality."

In the earlier months induction of labour may offer the mother the best chance, but what we have already said shows that delivery *per vaginam* at term in inoperable cases of cancer either unassisted or assisted is a very dangerous proceeding. A better chance for both mother and child is secured by operating through the abdomen and delivering the child by Cæsarean section. This should be done as soon as the child is viable, and not delayed till the commencement of spontaneous labour. Delay, we are certain, is not in the interests of the mother, nor is it likely to be of any advantage to the child. The further the pregnancy advances, the more enfeebled the mother becomes, and the more unable is she to nourish the child, whose vitality suffers accordingly.

After the child has been delivered through an opening in the anterior uterine wall, it is advisable, on account of the danger from sepsis, to remove the body of the uterus, and cover over the diseased cervix with peritoneum. By adopting this precaution, infection may be prevented from spreading upwards into the peritoneal cavity.

In conclusion, I need hardly say that in the foregoing remarks I have attempted to discuss the general principles of the subject, and that it is necessary to make the reservation that every case is a law to itself, and must be treated on its own merits. I think it is well, however, to have general lines brought before us and considered, so that when we meet with a case we may be able to decide with promptitude what treatment is most suitable.

Professor Simpson said they were greatly indebted to Dr Brewis for his extremely useful paper. He had not himself

had experience in this subject, but had felt difficulties of the same nature as those to which Dr Brewis had alluded, as to the proper line of treatment in cancer of uterus during pregnancy. His own mind went very much along the lines of those Dr Brewis had suggested. But he was not quite sure that they should interfere at once in the early stage of cancer unless hæmorrhage were severe or there were other symptoms calling for immediate operation; otherwise it would be better to give the child a chance of becoming more fully developed, and to wait a little and see with what degree of rapidity the disease was progressing.

Dr Berry Hart said he had had no experience in cancer of uterus in advanced pregnancy, but he had performed vaginal hysterectomy for the disease in early pregnancy (7-8 week), and had been much struck with the ease with which the operation had been done. He considered Dr Brewis's remarks very judicious, and that they would be a very valuable guide in similar cases. He did not like to differ from Professor Simpson, but he did not see any reason to wait three or four weeks to see whether the cancer was growing rapidly. He imagined that the sooner the uterus was removed the better. He was interested in hearing about the abdominal route. On the continent, where the subject had been specially worked at, he thought they had come to the conclusion that too much importance had been attached to enlarged glands, and that the speed of infection was rather by connective tissue than glands. He thanked Dr Brewis for his paper, and would like to ask the reason why the clamps were left on in two cases and the operation not completed by ligature.

Dr Church asked whether, in any of the pregnancies of the second case Dr Brewis had mentioned, the lactation had overlapped the pregnancy, for he had come to the conclusion that there was a certain relationship between disease and the overlapping of pregnancy and lactation. He mentioned one case in

which the mother had nursed her child whilst three or four months pregnant with her last child, who had since developed cancer of the breast.

Dr Scott Macgregor said that two years ago he had operated on a patient with cancer of the cervix who was four and a half months pregnant. He had decided to wait a little, but violent hæmorrhage set in and he had to operate. He induced premature labour and removed the uterus some days afterwards.

The President, in the name of the Society, thanked Dr Brewis for his most interesting and useful paper. He had not quite understood whether Dr Brewis advised the vaginal or abdominal route in these cases.

Dr Brewis in reply said he was much obliged to the President and Fellows for the very kind way in which they had received his paper. In the earlier months of pregnancy he advised the vaginal route and believed all agreed about that. In the later months it was a disputed question as to whether the vaginal or abdominal route should be followed. His argument was that, taking the method that was preferable in the interests of the child, the operation of Cæsarean section followed by panhysterectomy was better than cervical section with total extirpation. He had had no experience of the vaginal route in advanced cases, but he had quoted several authorities who had removed a full time uterus by the vaginal operation. With regard to delay, wherever there was a case of cancer of the cervix in an operable condition he thought the patient should be operated on at once, even in the later months of pregnancy, for he considered the life of the mother more than that of the child. With regard to Dr Berry Hart's question as to clamps, when he wished to remove a large uterus quickly, he very often ringed the cervix, cleared the bladder, opened the peritoneal cavity behind and in front, and placed clamps on each side of the cervix. This saved time in tying the uterine vessels

and the clamps with gauze packed in between them made an excellent drain. As to Dr Church's observations, he did not know whether the patient had been pregnant during lactation but he knew she had menstruated during lactation. Any condition that lowered vitality rendered persons more prone to the development of malignant disease.

VIII. HYDATID MOLE AND ITS RELATION TO DECIDUOMA MALIGNUM.

By D. Berry Hart, M.D., Gynæcologist to the Royal Infirmary, Edinburgh.

I wish to-night to discuss some points in relation to hydatid mole. This remarkable pathological change in a pregnancy must have always struck the practitioner, and, indeed, has been known for long. Since 1889, however, when Sänger first drew attention to the remarkable form of apparent malignant disease following abortion or pregnancy, and since it has been known that it most frequently follows hydatid mole (in about half the cases), great attention has been paid to such abortions, and a large number of questions await solution. The most clamant of these are: What is the nature of hydatid mole? Is there a malignant and simple form of mole? Can we tell histologically what form will develop malignant disease? How is hydatid mole, in certain cases, followed by metastatic deposits? and so on. Probably the best way to bring the questions before you will be to take up—

1. *The structure of the early normal villus.*
2. *The naked-eye and microscopic structure of the hydatid mole.*
3. *The clinical features of hydatid mole.*
4. *Its relations to deciduoma malignum.*

5. *Possible nature of hydatid mole, and of its relation to deciduoma malignum.*

6. *Can we ascertain by microscopic examination of a mole, or of its curettage fragments after abortion, whether deciduoma malignum will develop ultimately.*

FIG. 1.—PLACENTA OF SIX TO SEVEN WEEKS' FŒTUS.
Villi and intervillous spaces, above. ($\frac{4}{1}$)

1. *The Structure of the Early Normal Villus.*—While all agree that the core of the villus is early connective tissue, the nature of the epithelial covering has been long a source of dispute, the two opposed views of the older writers being usually that of its being a one-layered or multiple-layered epithelium; opinions were also greatly divided as to the source of the epithelial mantel, whether maternal or fœtal. Langhans, however, did most signal service when he pointed out that in the early villus we had a layer of epithelial cells next the connective tissue of the core, well defined, and with a

large nucleus, what is now known as Langhans' layer. Outside this is a nucleated protoplasmic layer—the syncytium (Figs. 1 and 2). This distinction is of great value. This description applies mainly to the early villus, as the syncytium thins and the Langhans' layer cells become less marked as growth of the

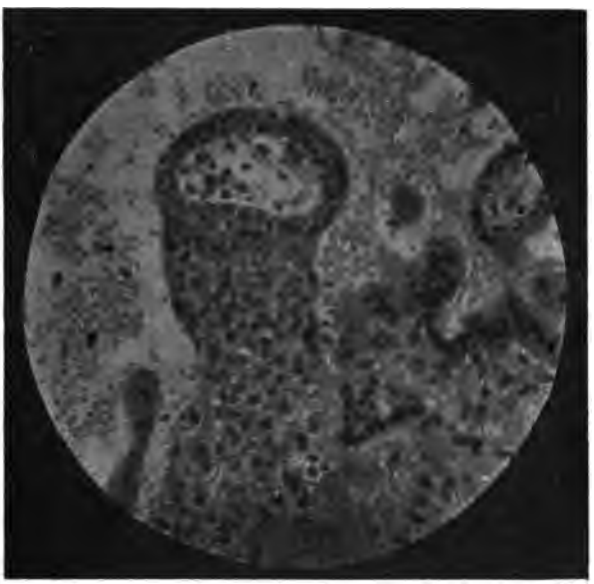

FIG. 2.—VILLUS OF SIX TO SEVEN WEEKS' PLACENTA.

Note core of connective tissue, with Langhans' layer and syncytium outside it. A column of cells (Langhans') connects serotina and villus. To the left and right of the column syncytial pieces are seen. ($\frac{200}{1}$)

placenta goes on. In later villi the epithelial covering is single and flattened, the syncytium very thin or absent, the connective tissue of the core more fibrous; *i.e.*, the villus normally differentiates as it ages—a fact, as we shall see, of great importance. The epithelial tips of the villi proliferate where they touch, and we thus get a condensed layer known as Nitabuch's fibrin layer, held by many to be transformed syncytium. Gulland and I drew attention to this layer, and believed it to be due to a

phagocytic action of the tips of the villi on the basal serotina. This layer I had previously noted in the full-time third-stage uterus. If there be this phagocytic action of the villi, a layer is formed between the fœtal and maternal portions of the placenta, which must to a certain extent limit the normal destructive action of the villus-tip. Both the layers of the covering of the villus are, I believe, fœtal and ectodermic, although many dispute this, and believe the syncytium to be maternal. The syncytium and Langhans' layer have no coagulating action on the blood. All these points are well illustrated by specimen of a six to seven weeks' placenta which I obtained from a case where I induced abortion for chorea. The specimen was hardened immediately on removal, and shows the structures well.

Normally, then, the early villus has this double epithelial covering, Langhans' layer and syncytium. These can absorb decidual tissue, penetrating into it can pass into bloodvessels without coagulating blood; while normally their progress is always marked by the condensed layer I have already mentioned (Nitabuch's fibrin layer). Finally, both epithelial mantel and connective-tissue core, which approximates to the Whartonian jelly in structure, differentiate in the normal placenta, the syncytium gradually thinning, the cells of the Langhans' layer becoming more flattened, while the connective tissue loses its myxomatous type, and becomes more fibrous.

2. *The Naked-eye and Microscopic Structure of the Hydatid Mole.*—The remarkable mass expelled from a patient with hydatid mole is familiar to most of you. It is formed usually of a congeries of small cysts containing fluid, and varying greatly in size (pin's head to less than an inch in diameter). No fœtus is present. The membranes alone may be degenerated, the placenta healthy. When we have a fœtus, a placenta, and a hydatid mole together, the case has been probably a twin one, where one of the fertilised ova has become hydatid. The

absence of the fœtus in almost every case is a great fact, not hitherto sufficiently appreciated.

Hydatid mole is rare, estimates varying from 14 in 10,200 labour cases—1 in 728 (König, quoted by Gebhard), and 1 in 2400 (St Bartholomew's statistics by Williamson).

The *microscopic structure* of the mole is of great interest. If we take first an ordinary case, such as one sees in practice, it will be found: (1) that the connective tissue of the core has become greatly altered in some cases, the cells withered-looking that a concentric arrangement of fibres lies at the periphery of the villus, whilst there is a central space with fluid, not containing mucin (Marchand). In some the connective tissue is little altered. (2) The change in the epithelial covering is very striking. There is an increase in the cells of Langhans' layer and a marked increase in the syncytium. This is in the form of protoplasmic masses with a vacuolated or spongy arrangement. Such mole cases are often *in utero* three to six months, and in a normal case the syncytium would have greatly thinned, the Langhans' layer become of a more flattened kind of epithelium, whilst the connective tissue would have tended more to a fibrous condition. In the mole, however, no such differentiation has taken place. This is a very significant fact in the light of an interesting paper by Minot, a well-known American embryologist, on the "Embryological Basis of Pathology." One of his suggestions or conclusions is that "normal differentiation impedes and limits the formation of tumours precisely as it does of further normal structures; so that tumours arise most readily from undifferentiated tissues, and may then be heteroplastic, and arise readily from differentiated tissues, and are then always homoplastic; and arise unreadily or not at all from the most highly specialised tissues." The great significance of Minot's remark will be seen as we go on.

It is in the highest degree possible that, apart from the ordinary hydatid mole I have just described, there is a special form of a very active penetrating or phagocytic nature, known

as the "mola destruens." It is better not to have too many divisions, but I may here, however, allude to a case Marchand has recorded recently, where the fact that the uterus and mole were obtained on post-mortem examination enabled him to make a very exhaustive and valuable examination. The main points in his case are as follows: The patient, forty-one years of age, a multipara, was received into the Klinik in a hopeless condition from hæmorrhage. The uterus was enlarged, its fundus being two fingers above the navel. The diagnosis lay between molar pregnancy and placenta prævia. The important conditions in the specimen are those relating to the uterus and its contents. The uterus, when removed at the autopsy, had its fundus 20 cm. above the symphysis. When laid open by a mesial incision of the front wall, molar masses and blood-clot filled the uterine cavity. The surface of the serotina was markedly irregular. The microscopical examination showed the changes in the villi I have already mentioned. The specially valuable part of Marchand's paper is that he shows that the cells of the villi perforate the fibrin layer and pass deeper into the serotina, destroying it. Thus the uterus may be perforated, as in Wilton's case (*Lancet*, 1840), and in others recorded, so as to set up intraperitoneal hæmorrhage.

3. *The Clinical Features of the Hydatid Mole.*—The clinical features of the ordinary hydatid mole are so well known that I need only briefly allude to them. The patient will complain of a watery or blood-tinged discharge, and of course, if actually aborting, may bleed profusely, and discharge the characteristic vesicles. The uterus is much larger than it should be for the number of periods passed, is soft and boggy, or irregular and projecting, in outline. The tumour is felt to be uterine and unfixed, and cannot thus be confounded with an extra-uterine broad-ligament gestation, where there is lateral fixation as a rule. I may mention that hydatid mole has been found in the tube, and also in the paravaginal tissue, the latter as a metastasis, but such rare conditions are only diagnosable by operation.

4. *Its Relations to Deciduoma Malignum.*—We now come to a most startling fact in connection with hydatid mole, viz., that the apparently malignant disease of the corpus uteri, first described by Sänger in 1889, and usually termed deciduoma malignum, is in about half of the recorded cases preceded by hydatid mole.

The typical case is this: A woman has a hydatid mole which is removed or expelled. In a certain number of cases, not very many,[1] the patient develops a bleeding mass in the uterus which shows syncytial masses and proliferation of Langhans' layer, with, in those not seen soon enough, or where vaginal hysterectomy is not performed, metastases, viâ the blood-vessels, almost always to the lungs, but in rare case to the brain.[2] The hæmorrhage may come on 6 days to 21 months (average 4 to 6 weeks) afterwards, is usually very profuse; but in Inglis and Bruce's case there were no local symptoms, the growth was embedded in the uterine wall, and cerebral hæmorrhage came on from metastatic masses containing syncytium and cells from Langhans' layer. Similar structures were found in the lungs. Some curious metastases are recorded, viz., to the vagina and paravaginal tissue. In the latter case (Apfelstedt and Aschoff) there was a fluctuating swelling extending from the left labium majus up the vaginal wall to the fornix, giving the physical signs of an abscess, and yet, when incised, old blood-clot and hydatid mole were evacuated. No wonder the authors write—BLASEMOLE! This swelling began eight days after a hydatid mole was expelled from the uterus.

Much dispute exists as to the nature of the growth; many

[1] Gebhard quotes König, who in 10,200 labour cases noted fourteen hydatid moles. Twelve of these were controlled, and in none did malignant disease follow.

[2] *Vide* case by Inglis and Bruce, *Edin. Obst. Trans.*, xxvi. 119. They give a table of deciduoma malignum cases, ninety-seven in number; of these forty-six followed hydatid mole, nineteen normal labour, twenty-eight abortion, and four extra-uterine pregnancy.

hold that it is sarcomatous, more that it is an epithelioma. But this will be considered later.

5. *Possible Nature of Hydatid Mole, and of its Relation to Deciduoma Malignum.*—My first remarks under this heading must be negative. I deprecate any terminology based on our present conceptions, and I object to premature classification. Virchow, the greatest pathologist in the world, whose recent death we deplore, and whose pathological discoveries have been approached by no one, termed the hydatid mole "myxoma chorii." This has really retarded our knowledge. The tissue of the hydatid mole is certainly a degenerated connective tissue and epithelium—tissues that have not differentiated up in the scale—not a myxomatous growth. The same in regard to the term "deciduoma malignum." No name we could give at present would even approximate to the truth appreciably. Let us therefore retain the ordinary term "hydatid mole," a term involving no theory; and if we keep to the term "deciduoma malignum," let us understand that each pathologist may define it as he pleases.[1] What idea can I now present of hydatid mole and its occasional dreadful sequel, deciduoma malignum?

We must first start, in attempting to arrive at this, with the early structure of the placental villi and their relation to the serotina. Where the villi tips touch the serotina a condensed layer of reaction forms (Nitabuch's fibrin layer: phagocytic-action layer), and thus we both get absorption going on and undue penetration into the decidua avoided.

The normal villi do not, however, remain the same during pregnancy. The syncytium thins greatly, and in part disappears; Langhans' layer becomes less active—at any rate, the cells are smaller; the connective tissue becomes more fibrous. This means differentiation, a passage from the embryonic type to a higher, more organised condition. Can we explain how this

[1] Personally I should prefer the term "metastatic mole" for deciduoma malignum following mole, but the latter term seems to have caught on.

comes about? I have already endeavoured to show in a previous paper that it is due to the action of the fœtal thyroid, which has a stimulating effect on connective tissue and epithelium. In the well-known adult myxœdema all know what an effect thyroid has. I have examined microscopically skin in adult myxœdema, and the impression it made on me was that of a degenerated tissue.

In the hydatid mole we find in the typical vesicles: (1) degeneration of the connective tissue of the core; (2) proliferation of Langhans' layer; and (3) increase in the syncytium, with vacuolation both in Langhans' layer and in the syncytium. The villi are degenerated, not differentiating into a more stable tissue, as they would in the normal placenta long before the period we usually meet them at. Why should this happen? Death of the fœtus has been advanced as a cause. The fœtus is, however, often dead, and yet no hydatid mole results. My suggestion is that as the result of the non-development of the embryo before the thyroid develops (fifth week) we get the chorionic tissues unaffected by thyroid secretion, and thus remaining an undifferentiated tissue. Its syncytium and Langhans' layer thus retain their destructive activity, break through the fibrin layer, as Marchand has shown, and may in special cases when not cast off destroy markedly the decidua serotina, and even penetrate the uterine wall.

When a part of the mole is retained, its dangerous power lies in its phagocytic burrowing tendency, its penetration of blood-vessels, and its non-coagulant power. It thus gives rise to metastases in blood-vessels, and when unchecked causes death by loss of blood and marasmus. Is it, then, malignant? It may be, indeed is probably, an epithelioma, and yet we can understand its danger without entertaining the idea of malignancy. Actinomycosis is a parasitic disease, spreads and destroys tissue, causes extensive hæmorrhages, liver and lung metastases, and yet is not, and, indeed, has

never been, considered by any one as malignant. It has the clinical features in part, and causes death like a malignant affection.

I am, therefore, anxious that those of us who are investigating the nature of hydatid mole and deciduoma malignum should first inquire round the special domains of these subjects without raising too broad a question prematurely. Accordingly, I have put my view in terms not necessarily involving the idea of malignancy.

6. *Can we ascertain by Examination of a Mole, or of its Curettage Fragments after Abortion, whether Deciduoma Malignum will develop ultimately?* This is a most important question. The value of vaginal hysterectomy in cases of deciduoma malignum seen in time, and even when some hæmoptysis has come on, is undoubted. It would be wrong to extirpate the uterus in ordinary hydatid mole. The proportion of cases of deciduoma malignum following a mole is very low, probably less than one in a thousand, although, of course, half of the cases of deciduoma malignum are preceded by hydatid mole.

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So far as I know at present, there is nothing specially in the microscopic structure of a mole, as ordinarily seen in practice, to show that it may be followed by deciduoma malignum. In one case where I examined the mole carefully there was proliferation of Langhans' layer and abundance of syncytium. This case was kept under observation, and there has been no mischief, although more than a year has elapsed; in addition she has had a full-time healthy child.

Of course, in the form where the uterine wall is being eroded or perforated one would be justified in extirpating.

The point comes up in another form. A patient has had a mole which is cleared out. Shortly after, she has discharge, and is curetted. There is not much found, but it must be examined and the question of extirpation faced.

Such a case occurred recently in my hospital practice, and as the mole was examined and the scrapings of two subsequent curettings, it is worthy of our attention. (Case of Dr Norwell, Perth.)

The patient was admitted to Ward 36, Royal Infirmary, on 20th October 1901, and found to have a hydatid mole. The uterus was the size of a six months' pregnancy, but only three

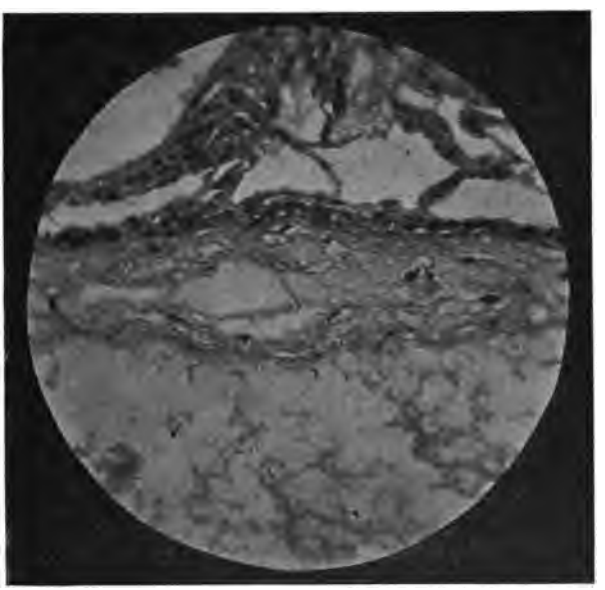

FIG. 3.—HYDATID VILLUS: EDGE OF CORE WITH LANGHANS' LAYER AND HYPERTROPHIED SYNCYTIUM. ($\frac{20}{1}$)

periods had been passed. She had her last unwellness on 27th July, and in September there were attacks of pain and flooding. The cervix was dilated and the uterus thoroughly cleared out with the finger and a flushing curette by Dr Milne Murray. The mole was examined carefully microscopically, and in some parts the villi seemed fairly normal so far as the epithelial covering was concerned. Degenerative changes were

usually present in the core, and at other points the syncytium was well marked. In some places only the core of the villi was present, and a homogeneous substance staining with eosin joined adjacent ones.

The patient was discharged well on 10th November 1901, and readmitted 14th December, as hæmorrhage had occurred on the 9th and 10th, necessitating the use of ergot and the vaginal

FIG. 4.—VILLUS WITH HYPERTROPHIED SYNCYTIUM AND LANGHANS' LAYER FROM A SCRAPING AFTER HYDATID MOLE. ($\frac{50}{1}$)

(*Vide* text, p. 58.)

tampon. On the 19th I curetted the uterus, and had the scrapings carefully examined. I must confess that what I found in the sections at first seemed to me to indicate beginning deciduoma malignum. There were marked syncytial masses and great increase in Langhans' layer. One villus showed this markedly (Figs. 4 and 5). There cells were in the

core apparently derived from Langhans' layer, and the syncytium and cells of Langhans' layer formed a thick covering to the villus, the syncytium running through the Langhans' cells like partitions. Had I relied on this microscopical condition I should certainly have advised hysterectomy. There, however, had been no marked hæmorrhage, the villi remains were not plentiful, there was no mass of tumour, as there usually is, and

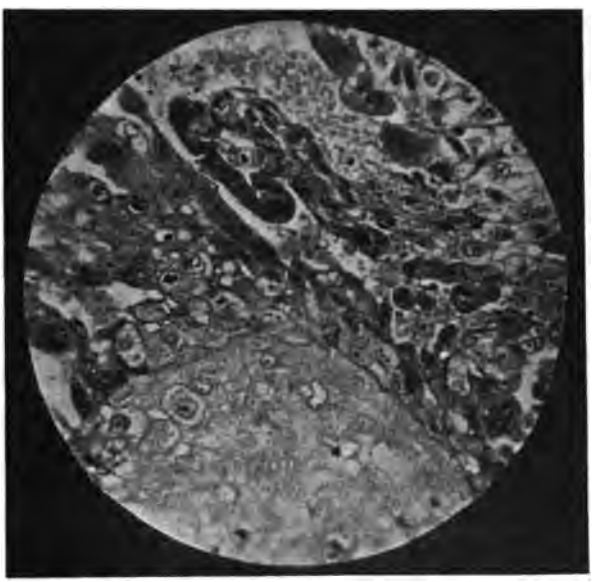

FIG 5.—VILLUS OF FIG. 4.
Shows part of core with cells in it, probably Langhans', and columns of syncytium with Langhans' cells between. ($\frac{200}{1}$)

I thus waited. The patient was kept under careful observation, and I again curetted on 3rd February 1902. This time I obtained nothing but healthy mucous membrane. Now the patient is again pregnant and apparently well.

This case illustrates the great difficulty in determining afterwards, in some cases of mole, whether uterine extirpation is necessary. Bruce's case, where there were no local symptoms,

and no evidence of return till cerebral hæmorrhage came on, shows how warily one must walk. Usually, however, the marked bleeding, the great bleeding set up by curetting, the enlargement of the uterus, and the mass felt digitally, give sure indications for radical treatment.

Many lessons are taught us by the conditions we have just considered. How, for instance, was this relationship between labour at full time, abortion, and extra-uterine gestation so long missed? It was first pointed out by Sänger in 1889, and now every year cases are recorded, so evident that we rub our eyes.

Then we may note that a pure academic discussion may have ultimately great practical results. The discussions as to the covering of the villi may have often raised a smile on the face of the practical student or specialist, and yet we now see the importance of a thorough scientific basis to our gynæcology and obstetrics. Then, we know too little of the physiology of the embryo. When I suggested the action of the fœtal thyroid, it was, I believe, the first time that it was thought of, and we are equally in ignorance as to the other internal secretions.

Very much on this question remains to be investigated, and as yet we see little, and that only darkly. Diligent work and the genius of some observers may yet give us the key to the whole mystery, and it is to be hoped that for the sake of suffering women and anxious specialists this discovery will not be long delayed.

[*Literature.*—This has been so abundantly given in other papers that I merely refer to Kermauner's summary in the *Monatsch. für Geburtshilfe*, August, 1902, Bd. xvi., Heft 2.]

Professor Simpson said this was an extremely interesting

paper. Dr Hart took the side of the histologists who maintained that the syncytium was fœtal; but in reading the medical papers, without being able to investigate for oneself, one is left in absolute perplexity. Winkler shows syncytial masses not merely at the end of the villi, but among the layers of muscular fibres, making their way to the surface to meet invading villi; whereas Dr Hart and others remark that the syncytial masses and villi are extra-uterine. The important thing, however, is, as Dr Hart has pointed out, to try and follow out the history of these layers. The Langhans' layer, all are agreed, is fœtal. Recent writers seemed to leave them in doubt as to how much Langhans' layer disappears at points. It is very interesting to follow out what Dr Hart referred to, that these masses have the power of independent vitality, and that they live at the expense of the tissues into which they penetrate, making their way to the blood-vessels, and in the mother's blood-vessels gathering nourishment for themselves, so that even where the embryo has died they may go on developing. With regard to this degeneration, it was quite clear that it commenced at an early stage because it affected the whole of the chorion. It would be interesting to trace where this degeneration took place in the villi at later stages. Dr Sym had shown a specimen at a meeting of the Society, in which with vesicular degeneration in some parts of a placenta the greater part was healthy.

Dr Haultain said he was naturally very interested in the paper. It corroborated what he had tried to bring forward some years ago when he cited a case of "deciduoma malignum." His own impression was the same now as then, and indeed more strongly so, as to the origin of this so-called deciduoma malignum, in so far as he believed it was entirely due to proliferation of the epithelium covering the villi. As to the

syncytium, the tendency of observers went to show that it was of fœtal origin; and this was perhaps more fully supported by the fact that in cases of myxoma of the chorion we have it admitted that it is a fœtal disease because of the proliferation of the villi which are fœtal structures. If it was admitted that in looking at these moles they found intense proliferation of the epithelium covering the villi associated with molar pregnancy, they would therefore naturally come to the conclusion that if it was a fœtal disease and there was intense proliferation of the syncytium, the syncytium would therefore be fœtal in origin. Further, it was not only the villi in actual contact with the uterine wall, but the villi situated actually in the centre of the mole, having no communication with the uterine wall, that were affected. If in these villi both syncytial and Langhans' layers proliferated to a marked degree, he could not see where the uterine mucosa or decidua came in to form the syncytium. He was more and more convinced in every respect that they had to deal with a fœtal condition, and that the condition of myxoma of the chorion was associated with proliferation of both these layers. And as they went further and considered deciduoma malignum, so-called, he would even give it a name, for if they admitted that it was epithelial in its origin, a proper designation would be chorio-epithelioma, because it was an epitheliomatous condition deriving its cells from the villi of the chorion. As to the important question Dr Hart had raised as to the diagnosis of deciduoma malignum, and as to the cases in which they were to operate and those they should leave alone, it was natural that after a mole had occurred and some part had been left behind, that there should be some hæmorrhage, just as after an ordinary imperfect abortion. On curetting, the structure would be found to contain myxomatous villi showing proliferation of epithelium. The mere fact of obtaining villi showing proliferating cells was by no means an indication that the uterus should be removed. And even if after the first

curetting, hæmorrhage should return and with a second operation one should still find these masses, he would still not say that the uterus should be removed. But when, and this he held to be the crux of the situation, they obtained large syncytial masses having the peculiar feature of branching processes—found in no other condition—plus the clinical feature of severe hæmorrhage during the operation of curetting, then they had more than a slight chain of evidence to go upon. In the case in which he had removed the organ he had met with these syncytial masses, but the condition was extensive, and there was enormous hæmorrhage on curetting, which, indeed, one could only expect, for the cells tended to penetrate blood-vessels and blood sinuses. In these cases both the clinical and microscopic conditions should be taken together, and he would prefer to act upon the clinical than the microscopic characters in deciding whether to remove the organ. He considered there could be little doubt about the connection between myxoma of the chorion and deciduoma malignum.

Dr Hart in reply said he had merely thrown out this case as a contribution of facts, and he would certainly not act upon the microscopic characters alone, but only in connection with the clinical symptoms. With regard to what Professor Simpson had said about the molar pregnancy, it was almost never found with an embryo. In cases where there was partial degeneration of a placenta present and a fœtus, it was generally considered that there had been a twin which had died early.

IX. A SERIES OF CASES OF "NON-SEPTIC" PUERPERAL PYREXIA.

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EVERY one engaged in obstetric practice is liable to occasional anxiety from the occurrence of puerperal pyrexia. No doubt, in the majority of cases, the fever is septic in origin—the amount of disturbance depending on the exact nature of the organism and on the dose of the poison which is absorbed into the system. Most cases get well—some spontaneously, others as the result of active treatment. It seems to me right that in the first instance one should regard all rises of temperature after labour with grave suspicion, and, when in doubt as to the cause, treat these energetically as real cases of puerperal septic fever, for delay in treatment is most dangerous. But we know that ordinary septic organisms are not the only causes of puerperal fever: there are many others, and it is in illustration of some of these that I venture to record the following cases:—

CASE I.—Mrs P. S., æt. 23, of a highly neurotic temperament, was confined eleven months after marriage. During the whole of her pregnancy she suffered greatly from not only morning sickness, but sickness at any time of the day; was nervous and generally unhappy. So bad was her sickness up to the fourth month, that the question of procuring abortion was seriously considered, but fortunately the condition somewhat improved, though it did not cease entirely till after the child was born. The labour was practically

normal, forceps being used to bring the head over the perineum, and the placenta was expressed half-an-hour later. At first the patient seemed very well, but within an hour she suddenly collapsed; the pulse became scarcely perceptible; her skin was pale and cold; she said she was dying, and indeed for the moment one felt she was right. There was no hæmorrhage. Stimulants were freely administered, and the patient revived, only, however, to relapse again into a semi-conscious, collapsed condition. For six hours I never left her, and during that time she had frequent attacks of syncope, which, however, became less and less severe, and twelve hours after the confinement she seemed very well. She had no heart disease. On the following morning her temperature was 99·6°, and in the evening it was 100·2°. The patient was restless and very nervous. On the second morning the temperature was 101°, and in the evening it was 102°; the pulse, however, was only 80 per minute. The patient's general condition was not satisfactory; she looked ill and was sleepless. Thirty grs. each of bromide and chloral were given, but the sleep obtained was slight and fitful. On the third and fourth days there was no improvement; the temperature being very erratic, and reaching often 103°. On the evening of the fifth day the patient seemed very ill: temperature was 105°, and the pulse was 120; she was in a highly excited state, though not in the least delirious, and talked incessantly about her immediate death. The vaginal discharge was somewhat scanty, but otherwise normal.

Sir Halliday Croom saw the patient with me at 10 P.M., and agreed that the condition was entirely neurotic. He administered a good scolding, assured the patient that she would yet be perfectly well, and within an hour after the visit the temperature was 99°. Next morning both tempera-

ture and pulse were normal; they continued so till the end of the puerperium. However, later in the year the patient had a distinct attack of neurasthenia, for which she had a complete course of Weir-Mitchell treatment, with some benefit. Nevertheless, she is still very nervous, and only the other day she herself telephoned me that she was just dying and I had better come at once. I told her I would come in an hour or two, and on my arrival I found her perfectly well, but she assured me that when she telephoned she felt that she could not live a minute.

This case of puerperal fever I regard as purely neurotic. There was absolutely no indication of sepsis, and the rapid disappearance of the high temperature, when none but moral treatment was adopted, could not have occurred except in a nervous condition. Throughout the illness there was a striking discrepancy between the temperature and the pulse rate, the latter being often nearly normal, while the former was very high; and this fact helped one in diagnosis. The condition of the pulse is always a more important indication of the gravity of a case than the exact degree of fever. The patient was not suffering from mania. She had a fixed notion that she could not possibly survive labour, and during her puerperium she was so nervous and so expectant of death that the high temperature resulted. Further, I have no doubt that the condition was aggravated by the patient herself discovering on the fourth day that her child had been born with a club-foot. This fact had up to that time been concealed from her.

CASE II. illustrates the course and some of the anomalies of puerperal scarlet fever. Mrs W., æt. 25, was confined of her first child on 25th September 1892. The labour was almost normal, forceps being used only towards the end of the second stage. She had a perfectly natural puerperium

till the eleventh day, on which she complained of slight headache and of general malaise, while her temperature rose to 101° in the evening. A mild diaphoretic mixture was given, and on the following day the temperature was 99°, and the patient expressed herself as feeling perfectly well again. On 8th October, the thirteenth day, the temperature was normal, and there were no apparent symptoms whatever. On 9th October the temperature again rose to 101° in the morning, and the patient complained of headache and depression of spirits; in the evening the temperature was 102°. On the morning of 10th October the patient felt very ill, and the temperature was 102°. The lochia was normal, and there was no abdominal tenderness. At 7 P.M. that evening the temperature was 105°, and the patient was covered with a diffuse red rash. There was no sore throat and no typical strawberry tongue, but a diagnosis of scarlatina was made. A powder consisting of pulv. ipecac. co. 2½ grs., quin. sulph. 1½ gr., and pulv. digitalis ⅓ gr., was given every two hours, but at 10 P.M. the temperature was still 105°, as it was again at 9 A.M. on the 11th. However, during that day the condition of the patient very much improved; the temperature gradually fell, till at 4 P.M. it was 102°, and at 10 P.M. 99°. The rash became less distinct, and the patient felt very much better; no sore throat developed, and there were no further symptoms. On 12th October the rash was rapidly fading away; the temperature morning and evening was 99° and 100° respectively. From this time onwards the patient made an uninterrupted recovery; desquamation occurred throughout a period of six weeks, without a complication of any kind whatever. The baby showed no signs of scarlet fever.

There are one or two points of interest in this case. First of all, how did the infection occur? An interesting fact was

elicited. Three weeks before her confinement, Mrs W. visited a cousin, and that very day my then chief, the late Dr Williamson, saw this cousin on account of peeling of the skin, and he diagnosed that she had had a mild attack of scarlet fever, which opinion was confirmed by the occurrence of a bad case in the house some days afterwards. Is it possible that the patient was infected several weeks before the symptoms appeared? Apparently it is so, and it is one of the anomalies of puerperal scarlet fever that the incubation period may be very much prolonged. Many similar cases have been recorded. At all events, there was no other known means of infection in this particular case.

Further, the disease did not present the usual features. There was no sore throat and no typical strawberry tongue, but there was slight albuminuria, though, under the circumstances, I do not lay much stress upon that. I know that some authorities doubt the nature of these so-called puerperal scarlatinas, and hold that the majority are really cases of septicæmia. I think there can be no doubt about this case: the symptoms did not appear till the eleventh day; there were absolutely no local indications of sepsis; the rash covered the whole body completely, and was not confined to one part, as is so often the case in septic rashes, and the convalescence of the patient presented all the special features of an ordinary scarlatina.

CASE III.—Mrs K., ii.-para, was confined on 4th August 1899. Labour was perfectly normal and easy. She was absolutely well till the seventh day, when, without any warning, she had a rigor, and her temperature rose to 103°. Thereafter she complained of severe headache, pain in the back, and general aching. The lochia was normal, though afterwards it was scanty, and there was no abdominal tenderness.

Accordingly, a diagnosis of influenza was made. Under the usual remedies the temperature rapidly fell, and by the eighth day the patient felt very much better, the evening temperature being only 99·8°. On the ninth morning a second rigor occurred, and the temperature ran up to 104°. In the afternoon it was still 102°. In case, by any chance, the cause was a septic one, I administered an intra-uterine antiseptic douche, but the discharge that came away was normal, and immediately afterwards the patient had another rigor with high temperature. She was put on two-hourly doses of quinine and digitalis, but, in spite of these, at 9.30 P.M. another rigor occurred, and the temperature ran up to 105°, while the pulse was 144, and the patient seemed alarmingly ill. At 11.30 P.M. Dr Milne Murray kindly saw the patient with me: by that time the temperature had fallen to 102°, and on examination Dr Murray could find no septic cause. He agreed that the condition was probably influenzal, and advised a continuation of the quinine, etc. By next morning the patient's temperature was nearly normal, and from that time she made an uninterrupted recovery, being practically well in three days.

In this case the patient was no doubt infected by the nurse, who had had a very severe "cold in the head," as she called it, and confessed that she had been feverish for a day or two after her patient's child was born. She did not take to bed, but I have no doubt that she was suffering from influenza, and that, though her suffering was comparatively slight, the infection was sufficient to cause most alarming and disquieting symptoms in a puerperal patient. I never really thought the patient had septic fever, although as a matter of precaution, I did wash out the uterus. She had not the well-known expression and countenance of a septic patient; and, what is equally important, she had not the characteristic earthy septic odour. The fre-

quent rigors certainly suggested absorption of repeated doses of some poison from a local nidus, but frequent rigors may also apparently occur in puerperal influenza.

CASE IV.—Mrs H., primipara, was confined on 12th August 1899. Forceps were used when the head was low down, and delivery was easily effected. On the third day the patient had the usual castor-oil, and she was perfectly well. However, at 4 A.M. on the fourth day I was sent for, as she was very feverish and complained of great pain in the right side. The temperature was 102° and the pulse 120. Morphia was injected hypodermically, and this somewhat relieved the pain, but later in the day it recurred as badly as before. On examination *per vaginam*, everything seemed normal, but the tenderness in the right iliac region was so great that even the skin could scarcely be touched. The temperature continued at 102° and the pulse at 120. Quinine and digitalis were ordered every three hours, and, though the lochia was quite normal but somewhat scanty, vaginal douches were ordered at intervals. On the fifth day the symptoms were just the same, and the pain in the side still very acute. The patient seemed very ill, and the skin had a yellowish-white moist appearance, which was very suggestive of sepsis. The temperature in the morning was 102°, in the evening 103°. *Per vaginam* nothing in the fornices could be determined. I resolved to administer an intra-uterine douche, and accordingly the cavity was washed out with a weak solution of corrosive sublimate. Almost immediately afterwards the patient had a severe rigor, and the temperature ran up to 105°. It gradually subsided, but at 10 P.M. was still 102°. On the morning of the sixth day the temperature was 99°, and in the evening 100°; the patient was much better, and the pain in the iliac fossa was much less. Two days later there was practically no tenderness on pressure; the temperature was normal, and thereafter a complete and rapid recovery took place.

At the time I did not recognise the nature of this case; I thought of all possible pelvic conditions, especially of a ruptured pyosalpinx, but soon afterwards I came to the conclusion that it was a case of puerperal appendicitis. Perhaps it is well I did not recognise it at the moment, for I might have advised instant operation in the hope of discovering a ruptured appendix. I could not satisfy myself that the Fallopian tube was the seat of mischief; and it was only afterwards, when the patient could give me her previous history, that I surmised that the appendix was the seat of pain and the cause of the general symptoms. I have seen several cases of appendicitis during pregnancy—in one case it seemed to be the cause of premature labour; but this was the first case I have seen in which appendicitis gave rise to serious trouble during the puerperium. What happened to the appendix during these days I do not know, but, at all events, the patient did not for a long time afterwards have a single symptom. Later, however, I heard from her husband that she had again presented all the features of appendicitis.

In connection with this case there is one point to which I wish specially to refer. It is the occurrence of a rigor and high temperature after the intra-uterine douche, and I should be very glad to know whether the experience of other Fellows of the Society coincides with mine. I have several times noted this rigor, but always in cases in which the result of the douche proved that there was no retention of septic material; and indeed I observed it in one or two of the other cases recorded to-night. In cases where there has been urgent need for an intra-uterine douche, the result has been no rigor, but a rapid fall in the temperature, at all events for a time. It may have been an accident; but it has been my experience so often, that I am rather inclined to welcome a rigor after an intra-uterine douche than otherwise.

CASE V.—Mrs M. was confined of her fourth child on 2nd

November 1901; the child was born before I arrived at the house, and the placenta followed soon after. She was very well till the evening of the second day, when she complained of a sore throat and was somewhat feverish. On the following morning her throat was no better, and on examination it proved very red and angry. On the evening of the third day the throat was just the same, and the temperature was 101·5°. The condition of the throat did not improve with the usual remedies, and on the fourth day the morning temperature was 102°, while the evening one was 103°. At the evening visit on that day I observed what I took to be a commencing diphtheritic patch at the base of the uvula, and when I saw the patient at 8 A.M. on the fifth day the membrane was well formed, and affected not only the whole of the uvula, but part of the right tonsil as well. I sent the patient to the Fever Hospital as soon as possible, and I am indebted to Dr Claud B. Ker for the further temperatures of the case. The patient was very ill for some days after admission, the pulse being small, soft, and irregular. The condition of the throat rapidly improved under the antitoxin and other treatment, but six days elapsed before the fever disappeared. The patient made thereafter an uninterrupted recovery.

The cause of the puerperal diphtheria was not difficult to find. On examination by the sanitary authorities, the drains were found imperfect, and there was a free communication between these and the room in which the patient was confined.

CASE VI.—Mrs M., primipara, was confined on 13th August 1900. The labour was prolonged, and proved a difficult forceps case: the perineum was torn, and two stitches were inserted. For thirty-six hours the patient was very well, but suffered from retention of urine, so that the nurse had to use the

catheter. On the third day everything seemed normal, and the patient passed water at intervals. However, that evening her temperature, after a slight rigor, went up to 102°. On the morning of the fourth day it was 100°, but by 4 P.M. had again risen to 102°. The nurse assured me that the patient was micturating normally, and the lochia was not offensive. However, I washed out the uterine cavity, and this operation was followed by a rigor and a further rise of temperature. At 10 P.M. it was still 102°, and during that night the patient became delirious: she got out of bed and walked into an adjoining room where the nurse was sleeping, and of this visit she had no recollection afterwards. On the morning of the fifth day the temperature was 102·5°, but I was assured by the nurse that the bladder was normal and the discharge aseptic. However, on examining the abdomen, I found it occupied in front by a large, fluctuating, tense swelling, which extended above the umbilicus. I at once passed the catheter and removed a very large quantity of urine, and the tumour disappeared. Within four hours the temperature was normal, and it never again rose above 99°. For some days the catheter was passed twice daily, but soon after the stitches in the perineum were removed, the patient regained complete control of the function of micturition, and ultimately made an excellent recovery.

In this case the sole cause of the alarming temperature and symptoms, even to the extent of delirium, was retention of urine, and at first both the nurse and I were misled by the fact that the patient passed a certain overflow of urine at regular intervals, not by constant dribbling, as is more frequently the case.

The cases which have just been recorded illustrate a few of the causes of puerperal fever, other than ordinary septic infection. There are, of course, many others, but only those which

are somewhat unusual have been selected. One need not do more than mention those frequent puerperal cases in which fever results from acute constipation, from chill, from emotion, from congested mammæ, from sore nipples, or from reflex irritation, which are in the common experience of all. A puerperal patient may be attacked by any acute disease, and four of my cases are really examples of this. It is often difficult at first to distinguish these intercurrent acute illnesses from septicæmia, but it is a good rule to suspect and treat all such as of septic origin until symptoms develop which render a diagnosis clear.

I have ventured to read this paper, partly in response to the appeal of our President for records of clinical experiences, and partly in the hope that what has interested me may interest others, and lead to some discussion in the Society.

Professor Simpson thanked Dr Lackie for his interesting paper. He thought the most important point was the rise of temperature after the injection into the uterus in several of the cases. It was not an observation he had himself made. Possibly it was due to there being already some irritation in the system, and that the uterine injection added to the irritation of the system and sent up the temperature. He did not quite understand why retention of urine should cause a rise of temperature unless there had been some irritation about the perineum, or else it was akin to the first case recorded.

Dr Berry Hart thought that "puerperal pyrexia" would be a better title for the paper than "puerperal fever." He considered the paper very interesting, and that Dr Lackie's way of expressing a rise of temperature during the puerperium as "puerperal neurosis" might be most useful.

In the case mentioned as due to puerperal influenza, he could not honestly have excluded some slight amount of pyæmia.

Dr Nicholson said that the pulse record was important in these cases as well as the temperature. While neither the pulse nor the temperature alone gave much information, yet it was just in those anxious cases that a comparison of the pulse frequency with the temperature chart often enabled one to suspect the true nature of the condition. The toxins of different diseases acted in different ways on the circulation. In genuine puerperal fever the pulse rate commenced to increase from the very beginning, and the artery gradually became distinctly contracted in the really severe cases. The toxins seem to act on the circulation in the same manner as the poison of scarlatina did. The infections of diphtheria and enteric fever seemed to lead to a slowing of the pulse in relation to the temperature; and, in the latter disease, the extreme softness and *dicrotism* of the pulse—so entirely different from any other type of puerperal pulse—he considered pathognomonic. In puerperal influenza, while the pulse might sometimes be rapid, still, in some cases, the toxins had been shown to produce an unduly slow pulse. He had himself noted a pulse of 50 with a temperature of 103° F. on the fifth day of the puerperium. He had also recently seen a case of retention of urine with high temperature, very similar to the one mentioned by Dr Lackie. He thought there could hardly be a paper of greater interest presented to the Society.

Dr Keppie Paterson mentioned a case showing the importance of coming to a right diagnosis between puerperal neurosis and puerperal fever. The case was one he had taken on after the birth of the child. A very high temperature and slow pulse were recorded, and he at first took the case to be a neurotic one, but the patient had died. This showed that a great disproportion between the temperature and pulse should not be taken as an indication that the disease was purely neurotic.

The President said he had no doubt as to the existence of

all the classes of cases which Dr Lackie had recorded. He first mentioned one of his own cases, which was undoubtedly a neurosis. He had also seen cases of puerperal influenza—occurring during an influenza epidemic—in which the patients went through the ordinary course of influenza with high temperature, headache, pains in back, etc. He was doubtful whether the case cited as scarlet fever was really due to that cause, for it did not appear to be the temperature of scarlet fever, and although a few cases of apparently long incubation had been recorded, it was extremely doubtful if it ever occurred. He had also had a case of typhoid infection occurring shortly before and manifesting itself during the puerperium. With regard to the Widal reaction it was not present in two non-puerperal cases which he had attended.

MEETING III.—JANUARY 14, 1903.

DR JAMES RITCHIE, *President, in the Chair.*

I. The following gentlemen were elected Ordinary Fellows of the Society:—A. S. Wells, M.B., Ch.B., 52 Queen Street, Edinburgh; A. B. Flett, M.B., Ch.B., 60 George Square; W. H. Eden Brand, M.B., Ch.B., University Union; Francis Cavanagh, M.B., Ch.B., Darfield, Yorks.

II. *Professor Simpson* showed (1) an OVARIAN TUMOUR removed from a young woman at 17. The patient came in with a high temperature, and from the history the case was considered to be one of ovarian tumour with twisted pedicle. On opening the abdomen the tumour was found to be adherent everywhere, and it was not possible to extract it entire. The

fluid from the cyst was found to contain pneumococci and streptococci, its walls were thickened and vascular, and in the interior of the cyst was a croupous lining. The patient made an excellent recovery. (2) FIBROID UTERUS removed from a lady who had been a martyr to dysmenorrhœa. The tumour had grown more rapidly of late. It was difficult to remove because of adhesions, and the left ovary and tube had to be dissected out afterwards. Some dried clot was found in the cavity of the uterus though the next period was almost due, and this was interesting in view of the fact that menstruation would go on for two or three days, then there would be an interruption, and then it would commence again. The tube ended in a cul-de-sac; from that point to the fimbriated extremity was a fine mesh of tissue with no canal.

III. *Dr Haig Ferguson* showed (1) EXTRA-UTERINE PREGNANCY complicated by an ovarian abscess the size of a small orange. (2) EXTRA-UTERINE PREGNANCY, showing a very perfect specimen of a fœtus in the sac which was just on the point of rupture.

IV. *Dr Munro Kerr* showed (1) EXTRA-UTERINE GESTATION, on which he had operated thirty-six hours after commencement of symptoms. (2) A SPECIMEN OF AN OVARY from a woman who had had one child a year previously, and had just missed one period, and about the time the next period was due had an attack of pain followed by two other attacks—all supposed to be gastro-intestinal. When he saw the case he diagnosed extra-uterine pregnancy; and when he opened the abdomen, found from 1½ to 2 pints of clotted blood in the pelvis. The tube was quite intact, but to the ovary was attached a mere solid piece of clot, beneath which was a Graafian follicle that had bled. The question was whether this hæmorrhage was from the Graafian follicle, or due to an ovarian pregnancy or to

a complete tubal abortion. On the whole he was inclined to think the bleeding was from the Graafian follicle.

V. A NEW METHOD FOR ESTIMATING THE RELATIVE SIZES OF THE FŒTAL HEAD AND MATERNAL PELVIS.

By J. M. Munro Kerr, M.B., C.M., F.F.P.S. (Glasg.), Obstetric Physician, Maternity Hospital; Assistant to Professor of Midwifery, Glasgow University; Dispensary Physician for the Diseases of Women, Western Infirmary.

Some little time ago I came across, in the report of a clinical lecture by Barbour, the remark: "The fœtal head is the best pelvimeter." The aphorism, so true in its completeness and so complete in its truthfulness, a characteristic by no means common to such sayings, delighted me so much that I determined to make it the text of my few remarks.

I need not, in an assembly of obstetricians and gynæcologists, take up time in enlarging upon the fact that neither by manual examinations, even the most careful, nor by pelvimeter, even the most modern, can the exact degree of pelvic deformity be appreciated. If any doubt the truth of that they have only to see, as I have done, a few cases of pelvic deformity, in which the pelvis was measured during life and after death in the post-mortem room, to be convinced of the fact. I have seen a difference of a quarter of an inch to half an inch in the conjugate between the two measurements, and that not only in cases of my own but in those in the hands of others of much longer experience.

Then, again, attempts at estimating the size of the fœtal head *in utero* must, I think, be admitted by all to be most disappointing. The fact that the abdominal and uterine walls are often so resistant that one cannot be sure of the exact spot on the surface of the skull one is placing the ends of the

calipers upon, and the fact that seldom is it possible to take a transverse measurement of the head, are some of the more important difficulties in the way of this method of examination.

With sorrow, then, we must admit that by the present methods at our disposal we can obtain measurements of the maternal pelvis and fœtal head only approximately correct.

In recent years, and more especially since Müller's writing on the subject, more attention has been given to the relative sizes of head and pelvis. I say in recent times, because Rigby, whose writings always appear to me amongst the most valuable in obstetric literature, to some extent appreciated this, for he distinctly speaks about the relative proportions of head and pelvis.

To Müller and Pinard, however, is due the credit of having first described two methods for testing the relative sizes of the

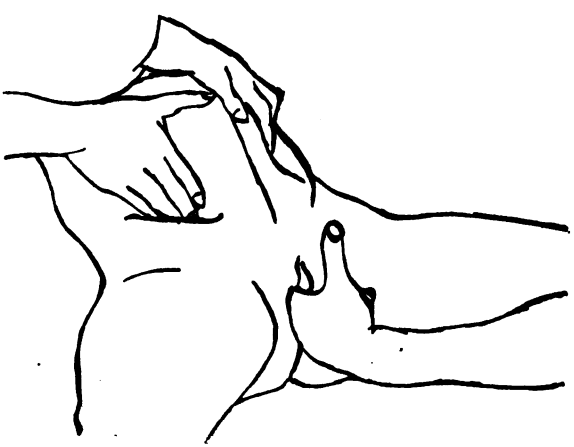

FIG. 1.—MÜLLER'S METHOD.

fœtal head and maternal pelvis. Müller's method (Fig. 1) is well known, and is quoted in all text-books. Originally it was introduced for the purpose of helping us to decide the most suitable time for the induction of premature labour in particular cases, the time for inducing labour being fixed as the time when

the head would just pass the brim and no more. In recent years the usefulness of the method has been extended, and I have frequently, both during labour and pregnancy, employed it for the purpose of estimating the proportions of the head and the pelvis. Employed for the latter purpose, however, it has often disappointed me; for while one can appreciate readily when the head can be pushed past the brim, if it is arrested then it is impossible to estimate from the internal examination alone what proportion of the surface of the head is beyond the brim.

Pinard's method (Fig. 2) is quite different. By it the estimation is made by purely external manipulations. The fingers

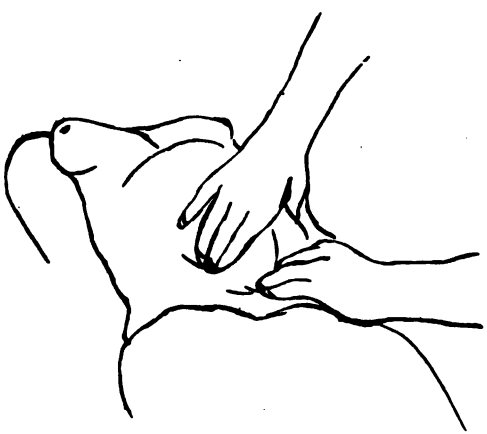

FIG. 2.—PINARD'S METHOD.

of one hand which estimates the engagement of the head are pressed over the brim at the symphysis, while with the other hand the head is pressed into the pelvis. This method I have also frequently employed, but while the results are often quite satisfactory, I have often failed to obtain by it a sufficiently exact estimate, and to be of real value the estimate must be very exact.

Pinard's method has the advantage over Müller's, that all manipulations are made by the operator himself; for in Müller's

method, you know, an assistant grasps the head and pushes it down into the pelvis. Now that is a great disadvantage; think in our gynæcological examinations how unsatisfactory would the examination be if an assistant had to press down the uterus or tumour.

Appreciating, therefore, the advantages and disadvantages of each method, it occurred to me in my examination of cases of contracted pelvis, that a combination of the two methods might be devised, and it is this method which I desire to bring under your notice this evening.

As the illustration shows (Fig. 3), one takes with the right hand a paw-like grip of the head and presses the head into the

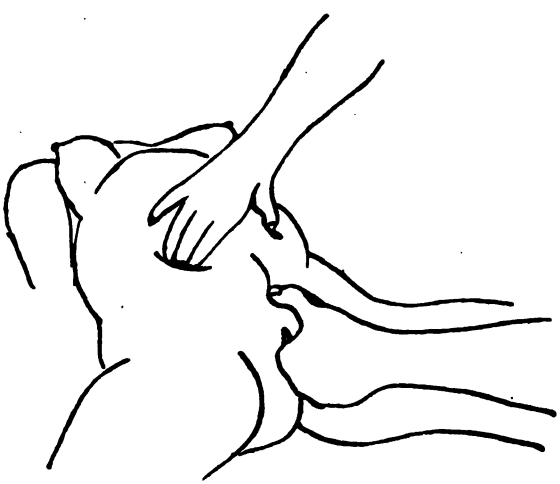

FIG. 3.—AUTHOR'S METHOD.

superior straight. Two fingers of the left hand are passed into the vagina. These estimate the consistency and manner of engagement of the head, also, if it has not been already done, the nature and extent of the pelvic deformity. Further information, however, is obtained by utilising the thumb which is passed along the brim, and estimates the degree of overlapping. By this bimanual method, also, the head is moved from side to

side at the brim, and the engagement of the occiput and sinciput is tested.

By this method I have been able to estimate with great accuracy the relative proportions of the fœtal head and maternal pelvis, and thus been able to appreciate the amount of difficulty the head will encounter in passing the brim. This is invaluable in deciding upon treatment in moderate degrees of pelvic deformity. Thus, by this method, I decide whether forceps, symphysiotomy, or Cæsarean section should be chosen. In carrying out the method of examination, it is best to stand at the patient's side, not right in front. It is of course a great advantage, and often a necessity, to have the patient under an anæsthetic; often, however, that is not necessary. The objection that the method is inapplicable in breech presentation falls to the ground when one remembers that in the great majority of cases a cranial presentation can be brought about by external version.

Professor Simpson said they had had ingenious suggestions before from Dr Munro Kerr, and this was another one—ingenious and interesting. It seemed so simple and natural, and he could quite believe it was of value. He considered it would also be of use as an excellent supplement in the consideration of the induction of premature labour. He supposed it was of special value in multiparous women.

Dr Haig Ferguson wished to add his appreciation of Dr Munro Kerr's paper. His only point of criticism was on the last sentence in the paper, as to the turning of a breech case into a vertex. He would like to know if Dr Kerr was in the habit of doing this, for that was not the teaching in Edinburgh in full-time pregnancy. And, indeed, Dr Donald of Manchester considered it better to turn a craniotomy case into a breech case first. With this opinion most obstetricians agreed as it was certainly easier in many ways to deal with the after-coming head in such circumstances.

Dr Buist wished to congratulate Dr Munro Kerr on his ingenuity. His own experience of external version was that it was not such a difficult operation as Dr Haig Ferguson would make out. As to theoretical objections, his own experience was that they obtained better results with the head than the breech as far as the child was concerned, and no worse for the mother. There were cases where the method could not be used, but that there were certainly cases in which it would prove very useful.

The President joined in congratulating Dr Munro Kerr. He supposed that Dr Munro Kerr had found the method to be very useful from working with it practically, and he believed that it was specially of value in multiparæ with not very thick abdominal walls.

Dr Munro Kerr, in reply, thanked the Fellows for their kindness in receiving the paper. With regard to what Professor Simpson said as to multiparæ, the method was certainly easier in them. As to Dr Haig Ferguson, he must differ entirely from him. As Dr Buist had pointed out, version was not difficult. It was the exception to find any difficulty in that operation, especially if the child were premature, and one was examining during pregnancy. And even at full time, although not so easy, it was not very difficult, and he considered it good treatment to carry it out. In deciding as to what operation to perform in a contracted pelvis, the measurement of the fœtal head and of the pelvis were the first steps towards obtaining a rough idea of what to do. The final step was the testing of the head and the pelvis, and by this one can decide upon induction of labour, forceps, symphysiotomy, or Cæsarean section. In such cases, if one did not perform version and get the head down, one would not find the relative size of the head and the pelvis. As to the advantage pointed out by Dr Donald of Manchester, it was in regard to craniotomy—in perforation of the after-

coming head. And in craniotomy cases where there was a slight degree of deformity, it was easier so to perforate. In cases of marked deformity, however, it was more difficult to perforate the after-coming head. Dr Fordyce and Dr Buist had pointed out the most important defect in the method. One could not be sure of how the head engaged. In moderate degrees of deformity, the head will come through sometimes with difficulty, at other times easily. One reason for this was, that in these cases where there was some scoliosis of the pelvis, the occiput might be on the roomy side or on the narrow side. But the most important was the parietal presentation. If that were an anterior one, the head would come through much more easily than if it were a posterior parietal presentation. It was difficult to tell whether one was making it an anterior or a posterior parietal presentation, but one must palpate out the exact position. With regard to justo-minor pelvis, one can also in such a case test the engagement of the head but it is not of so much value.

VI. TWO CASES OF ALBUMINURIA IN PREGNANCY; THE INFLUENCE OF THYROID EXTRACT.

By Alexander Linn, M.B., Ch.B. Glasgow, Senior Resident Physician, Dundee Royal Infirmary. Communicated by R. C. Buist, M.D.

The following are the case histories:—

Case I.—Mrs M. S., æt. 25, housewife, was admitted to the Dundee Royal Infirmary on 3rd October 1902, pregnant eight months, and complaining of swelling of face, arms, and legs of six weeks' duration. About the middle of August she first noticed her legs swell, and the swelling gradually increased till, on admission, the thighs were affected. About a week before admission she noticed her face swollen, especially in the mornings. Her hands also became affected. For three days

before admission she had pain in the epigastrium. There was no history of any special exciting cause. She had rheumatic fever six years ago and scarlet fever some time before that, and has been pale and breathless for a long time.

Sexual History.—Menstruation from 18—scanty, two or three days, regular; last period, February 1902. She has had for the last three or four months abundant yellow vaginal discharge with offensive smell. She had one child five years and five months ago; pregnancy and labour uncomplicated. No miscarriages.

On admission.—Patient was very pale, with no apparent swelling of the face. There was some puffiness about the arms, and the feet and legs were much swollen up to the thighs, and there was well-marked œdema over the whole of the back. The uterus reached above the umbilicus, and slight fœtal movements could be felt. There was a slight thrill, suggestive of ascitis, and the percussion note was dull in the flanks as well as over the uterine tumour. Fœtal heart sounds best heard just to the right of the umbilicus.

Chest.—There was enlargement of the cardiac, dulness to the left. A.B. in the fourth space 5 inches from the middle line. There was a systolic murmur replacing the first sound, and a reduplicated second in the mitral area. Pulse 76, regular in time and force, tension rather high.

On 4th October patient passed 37 ozs. of urine containing a large quantity of albumen with a few hyaline casts. She was put on milk only, and confined to bed. On 11th October, as she was very impatient of milk only, and the daily quantity of urine had increased to 50-60 ozs., and the albumen had fallen from 2 per cent. to 4 per cent., the diet was slightly increased to include one potato and a piece of dry toast.

From the 11th to the 17th October the urine varied from 40-60 ozs., and there was no apparent change in the condition of the patient, and on the 17th one (5 gr.) thyroid tabloid was given three times a day. From the 17th to the 30th October

the general condition of the patient remained unchanged, the urine varying in quantity from 30-50 ozs. in 24 hours with from 8 per cent. to 2 per cent. of albumen.

She was then allowed up for an hour each day, and from 1st November to 5th November her urine measured 56-72 ozs., and contained about 1 per cent. of albumen. On 4th November she complained of dimness of vision and severe headache. The fundi were examined and found normal. The fœtal heart could be heard and movements felt.

On 6th November, as the headache persisted, she was transferred to the maternity wards, and labour induced. Chaumpetier's bag was introduced at 11 A.M., the membranes having been previously ruptured. Although the uterus could be felt contracting strongly, she complained of no pain. The contractions continued regularly, and at 5.30 P.M., as the os was not dilating, traction was put on the bag, which burst. The cervix admitted the tips of three fingers, and was further dilated by hand. Forceps were applied and child extracted. It was dead, and the umbilical cord was dark and blood-stained. Placenta normal. There was slight hæmorrhage after the birth of the child, and the uterus showed some tendency to relax. This was met by $\frac{1}{100}$ gr. ergotin in hypodermically and hot intra-uterine douche. Her pulse was 120. One hour later it was 108. Next day the pulse fell to 104 and temperature 98°. The uterus was firm, and the lochia normal. From the day of confinement till the 13th November, the daily quantity of urine varied from 40-60 ozs., and the albumen was ·3 per cent. to ·5 per cent.

On the 13th November there was no œdema, and she had an increased diet and a (two pill) Blaud's capsule was given three times a day. The daily quantity of urine continued between 40 and 50 ozs., and the albumen was ·4 per cent. On the 21st the quantity of albumen increased again to 1·2 per cent., and showed no change till the 25th, when it fell to ·2 per cent. She went home on the 28th.

The daily urine record is given in the following table:—

		Ounces of Urine in 24 hours.	Sp. Gr.	Albumen. — Per cent.	Grains per oz. Urea.	Urea in 24 hours.
Oct.	4	37	1030	large quantity	...	...
,,	6	52	1025	2	6	312
,,	7	32+	1015	1·2	6	192+
,,	8	63	1015	·4	4·5	283·5
,,	9	53	1015	·45	3·7	198
,,	10	39+	1020	·5	4	156+
,,	11[1]	53	1015	2·5	4	212
,,	12	40	1015	1	3·5	140
,,	13	44	1015	2	3·5	152
,,	14	63	1020	2	9	567
,,	15	36	1015	1·2	4	144
,,	16	62	1015	2	6	362
,,	17[2]	44	1015	·8	3·5	152
,,	18	58	1020	2	6	348
,,	19	53	1015	1	5	265
,,	20	53	1018	1·4	4	212
,,	21	53	1015	1·2	5·5	291·5
,,	22	40	1015	1·8	5	200
,,	23	31	1025	1·4	...	...
,,	24	61	1020	...	7·5	382·5
,,	25	56	1015	·8	4	224
,,	26	39	1015	1·4	5	195
,,	27	...	...	...	...	...
,,	28	42	1018	1·4	7	294
,,	29	58	1015	1	7	406
,,	30[3]	51	1018	2	6	306
,,	31	38	1015	·8	7	266
Nov.	1	56	1020	2	5	280
,,	2	91	1015	1·4	7	427
,,	3	66	1010	1·2	5	330
,,	4	72	1012	·8	5	360
,,	5	43+	1015	·9	4	172+
,,	6[4]	48	1010	·8	3	144
,,	7	51	1015	·8	6	306
,,	8	60+	1020	·3	6	360+
,,	9	64+	1020	·4	6·5	416+
,,	10	75	1015	·3	4	300
,,	11	48+	1015	·5	5	240+
,,	12	48+	1015	·3	4	192+
,,	13[5]	50+	1015	·4	4	200
,,	14	50	1015	·7	5	250
,,	15	49	1015	·6	4	196
,,	16	50	1020	·4	4	200
,,	17	40+	1010	·5	3	120+
,,	18	47+	1015	·4	2·5	117·5+
,,	19	49+	1015	·4	4	196+
,,	20	32+	1020	·2	4·5	144
,,	21	52	1015	1·2	...	...
,,	22	42+	1012	1·4	...	...
,,	23	50	1012	1·2	...	...
,,	24	46+	1012	1·4	4	184+
,,	25	46	1015	·2	2·5	115
,,	26	36+	1010	·4	2·5	95+

[1] Bread and potato added. [2] Thyroid, gr. 5 td. [3] Up 1 hour daily.
[4] Induced delivery. [5] Light diet.

Average daily quantities of Urine and Urea.							
	Milk only.	Milk and Potato.	Thyroid—and up.			Puerperium.	Light Diet.
Days . . .	6	6	6	6	6	7	7
Urine, oz. . .	46+	46	46	49	56	56·6+	45+
Urea, grains . .	225·5	253	283	285	306	288+	175+
Pulse . . .	72-80	68-84	68-84	68-96	72-108	84-116	72-88

The case seemed to Dr Buist a suitable one for a study of the effect of thyroid extract, as it offered a long enough preliminary period to get the urinary normal. So far as the results go, the average daily quantity of urine remained almost constant except during the week preceding delivery. When it rose to 56 ozs., and this quantity was exceeded during the first week of the puerperium, the daily urea output was all through under normal, but gradually increased up to the time of delivery. The proportion of albumen did not notably change till after delivery. Headache, dimness of vision, and death of the child were not avoided.

CASE II.—Mrs H. D., æt. 19, primipara, was admitted to Dundee Royal Infirmary on 26th December 1902 (in the last month of pregnancy) complaining of swelling of feet, legs, and labia.

She had felt quite well till ten days before admission, when she had swelling of her feet and legs in the evening, and next morning her eyelids were swollen. She went about for three days, and a week before admission her labia became swollen and she had to remain in bed, and Dr Dickson of Lochgelly was called, and ordered her ʒi doses of Armour's Elixir Thyroid four days before admission. He states that there was no difference noticeable either in the swelling or quantity of albumen. She had in all ℥iss of the Elizir. She had vomited all solid food for a week. Bowels were rather constipated. The only cause she knows of was doing a heavy washing in a damp wash-house on the day preceding the swelling. Her previous health had been good.

Sexual History.—Menstruation from 14, regular, three to four days. During the early months of pregnancy she had morning sickness but had no other complication.

On admission.—She was well nourished and well developed. Face rather flushed and skin hot and dry. There was slight puffiness of eyelids and considerable œdema of feet and legs. The labia were very much swollen and were punctured. Pulse 98, regular, and of rather high tension. Both heart sounds accentuated; no murmurs. Respiratory system normal. Uterus extended to within 2 inches of lower end of the sternum. Fœtal movements were felt. No sign of ascites. Fœtal heart was most distinctly heard to the left and below the umbilicus.

She was put on milk only, and given Mag. Sulp. ℥i night and morning. On the 27th December she passed 44 ozs. of urine containing 1·3 per cent. of albumen and 5·5 grammes per oz. of urea. From 27th to 31st December, the daily quantity of urine increased to 60 ozs., contained ·3 per cent. to ·8 per cent. of albumen, and the œdema was distinctly less.

Pains set in on 29th December, and she was delivered of a healthy, mature child at 11.5 A.M. on 1st January. Labour was normal. The quantity of urine diminished from the day of

		Sp. Gr.	Amount in 24 hours.	Albumen. — Per cent.	Urea, grains per ounce.
Dec.	27	1020	44	1·3	5·5
,,	28	1025	49	·3	4
,,	29	...	29 +	...	...
,,	30	1015	67	·8	3
,,	31	1010	60	·4	2
Jan.	1 *	1010	43	·3	3
,,	2	1015	47	·8	4
,,	3	1020	...	1	3
,,	4	1025	18 +	1	3
,,	5	1030	31 +	...	3
,,	6	1020	39 +	1·4	2·5
,,	7	1025	36 +	2	2·5
,,	8	1020	28 +	...	2
,,	9	1005	38 +	·2	2·5
,,	10	1020	36 +	2	2·5

* Delivered.

delivery, and the quantity of albumen increased to 1 per cent. and 1·4 per cent. Puerperium otherwise uneventful.

The cases are recorded as a clinical contribution to the study of albuminuria in pregnancy. The fact that neither showed much effect from the thyroid extract must meantime simply be placed alongside the results in other cases. Only repeated observation will show whether we may be able at some future time to distinguish those albuminurias which will and those which will not be benefited by thyroid.

VII. THE TREATMENT OF THE AUTO-INTOXICATIONS OF PREGNANCY BY THYROID EXTRACT; THE ANTICIPATION OF IMPENDING ECLAMPSIA.

By H. Oliphant Nicholson, M.D., M.R.C.P. Ed., Obstetric Physician to the New Town Dispensary, Edinburgh.

The possibility of auto-intoxication as a cause of disease is a question upon which much attention has recently been directed. While it is not yet fully established that organic disease can originate in this way, it is quite certain that very grave functional disturbances may be produced.

When the complex processes of metabolism are perfectly performed, and at the same time there is efficient elimination of waste products, then auto-intoxication will not occur. It is probably seldom, however, that this ideal state of matters exists; consequently every one is liable at times to suffer from attacks of toxæmia. In some the toxins may only produce transient symptoms which, although unpleasant, are not dangerous. In others the results may be of a most serious kind.

When an auto-intoxication occurs, it may be said, in a general way, to arise from some failure in the processes of general metabolism whereby abnormal products instead of

normal ones find their way into the circulation, and remain to be dealt with by the eliminating organs. Hence, in such cases, the re-adjustment of metabolism, when this is practicable, is the first and most important principle of treatment.

At the same time all possible means should be adopted to maintain and, if necessary, to re-establish the activity of the kidneys and other eliminating organs.

The chief eliminating organs are the kidneys; and, so long as they functionate properly, a serious toxæmia might exist without giving rise to marked symptoms; it is, as a rule, only when some degree of renal inadequacy occurs that the toxins exert their influence on the tissues. It must be borne in mind that anatomically sound kidneys may temporarily fail to perform their functions, should their blood supply be greatly diminished from any cause.

Olivier has recently tried to determine the renal sufficiency in eclampsia by the administration of methylene blue. In four out of five cases the elimination was defective, yet in the patient with apparently efficient kidneys the symptoms were far more severe, and she died. Thus in the event of an excessive production of toxins, fatal auto-intoxication can evidently occur without obvious renal insufficiency.

During the course of pregnancy numerous and important changes occur in the maternal organism, and perhaps in no other condition are the functions of the various eliminating organs so liable to become deranged; everything is exceedingly favourable for the development of auto-intoxications. Yet it is usual to speak of pregnancy as a physiological process, and it must be admitted that most women show great adaptability in meeting the additional demands arising from the altered conditions. But in many cases there are evident indications of a breakdown, and then symptoms of an intense blood intoxication may appear which, if unchecked, may culminate in eclampsia.

To say that eclampsia is the result of a toxæmia does not solve the problem, for the nature of the toxins is quite unknown, and the views held regarding their origin are very numerous and widely different. While most authorities now regard eclampsia as due to an *auto-intoxication*, there are others who believe in the infectious origin of the disease. Stroganoff[1] is the strongest supporter of this theory, and some of his arguments cannot be lightly passed over. The occurrence of cases of eclampsia *in series* is well known, and is a most striking and important matter for consideration. In the Edinburgh Maternity Hospital, during the thirty-six days from 1st November to 6th December, there were thirty-seven confinements, and six of these cases were complicated by eclampsia. All these cases had had fits before their admission to the hospital. The extraordinary, and at present inexplicable, point is, why such a large proportion of pregnant women should almost simultaneously exhibit symptoms of profound toxæmia and renal insufficiency. But the fact that eclampsia sometimes occurs in this way does not necessarily lend support to Stroganoff's theory.

At the present day the weight of evidence is distinctly in favour of the view that eclampsia is the result of an intoxication originating within the body of the pregnant woman (auto-intoxication). As the condition only occurs during pregnancy and the puerperium, it is reasonable to suppose that the source of the toxins is to be connected in some way with the enlarged uterus and its contents—fœtus and placenta. The disappearance of grave pre-eclamptic symptoms coincidently with fœtal death, and the increased liability to eclampsia in twin pregnancies, are facts which almost compel one to admit the participation of the fœtus in the toxæmia.

It may be assumed that in every pregnancy certain pro-

[1] Stroganoff, *Zeitsch. f. Klin. Med.*, Berlin, 1900; *Monatschr. f. Geburt. u. Gynäk.*, Berlin 1901.

ducts which are partly of fœtal origin, and which may arise also from faulty maternal metabolism, are thrown into the circulation. It may also be assumed that under normal conditions the various "defence organs" of the body deal so efficiently with these products, modifying or neutralising them in such a way, that the kidneys have no difficulty in eliminating the ultimate substances sent to them. The pregnancy under such conditions will pursue a more or less physiological course without the appearance of symptoms of serious toxæmia.

Under other circumstances, however, these toxic products are not properly modified, and are not presented to the kidneys in a suitable form for elimination. The kidneys may attempt to pass the abnormal substances out of the blood, but soon fail to do so, and then auto-intoxication begins. This renal insufficiency is the most essential factor in the production of the eclamptic state.

I have elsewhere expressed the opinion [1] that these improperly converted toxic substances, which under conditions of normal pregnancy never come to the kidney, act in the same manner as toxic doses of digitalis, and, by powerfully constricting the renal vessels, ultimately abolish the secretion of urine, and hence their own excretion. With the gradual suppression of urine the toxins are absorbed, and, by their specific effects on the nervous system, produce a recognised train of symptoms which may culminate in convulsive seizures.

When there is no obvious deviation from the normal in the health of a pregnant woman, we may assume that the toxic products of fœtal and maternal metabolism have undergone modification, or have been rendered innocuous before they reach the kidneys. Again, should toxic symptoms appear —headache, vomiting, albuminuria, etc.—we may infer that the substances have come to the kidneys for excretion in an imperfectly neutralised and unsuitable form.

[1] *Brit. Med. Journ.*, October 1902.

What is the explanation of this occasional failure in the processes of general metabolism whereby dangerous toxic substances are not arrested or transformed before arriving at the kidney?

It would seem to be worth while to consider this question along with what is known about the functions of the thyroid gland, and the well established therapeutic action of thyroid extract.

In previous communications[1] I have discussed some of the reasons which led me to suggest the use of thyroid extract in the treatment of pre-eclamptic symptoms, and also in eclampsia. I have stated my belief that a relationship exists between the thyroid gland system and the conditions which sometimes lead to auto-intoxication in pregnancy. The functions of the thyroid gland are largely concerned in defending the organism against the action of toxins which are elaborated during the processes of metabolism. In pregnancy there is an increased production of toxins, and it has long been known that thyroid enlargement occurs at this time. The precise significance of this thyroid hypertrophy was unknown till Lange published the results of his most interesting and important work on the thyroid gland in relation to pregnancy.[2]

Lange examined 133 pregnant women in the last twelve weeks of pregnancy, and found the thyroid gland hypertrophied, partly or wholly, in about 81·2 per cent. of them.

This hypertrophy usually appeared somewhat earlier in multiparæ (fifth month) than in primiparæ (sixth month).

The enlargement disappeared in the puerperium, and reappeared at each subsequent pregnancy.

When iodothyrin was administered in small doses to a pregnant woman who showed the hypertrophy, the gland

[1] *Brit. Med. and Surg. Journ.*, June 1901; *Journ. Obstet. and Gynæcol. Brit. Empire*, July 1902.

[2] Lange, *Zeitsch. f. Geburt. u. Gynäk.*, 1899, vol. xl., p. 34.

diminished to its normal size within a fortnight; when treatment was stopped the gland almost immediately began to enlarge again.

Clearly, then, there is an increased functional activity of the thyroid gland in normal pregnancy.

Lange has observed pregnant women where this physiological enlargement of the thyroid did not occur, and has noted what happens under such circumstances. Some clinical facts and experiments on animals have also indicated what abnormal symptoms may arise during pregnancy and the puerperium when thyroid hypertrophy is absent. Out of the 133 pregnant women examined by Lange, 108 showed hypertrophy of the thyroid, and in twenty-two cases it was absent. In three instances it was doubtful.

Of the twenty-two abnormal cases, sixteen had both albuminuria and tube-casts (pregnancy kidney), which in six instances terminated in eclampsia.

Of the 108 women who had a normal thyroid hypertrophy, only two had albumin in the urine, and in these there was a history of renal disease previous to pregnancy.

Six of Lange's patients developed eclampsia, and a remarkable thing is that these same women again took eclamptic fits in subsequent pregnancies. I wish to direct special attention to this point, because it coincides with my own experience in the cases I have successfully treated with thyroid extract. A striking feature in my cases was marked general œdema of a solid character, not pitting on pressure, and sometimes there was no albumin in the urine.

Among Lange's eclamptic patients there were two sisters, and Elliot[1] has recorded instances of the "family character" of eclampsia.

Recently Herrgott[2] has published a case of pregnancy

[1] Elliot, *Amer. Med. Times*, 1862.

[2] Herrgott, *Ann. de Gyn. et d'Obstet.*, July 1902.

with myxœdema in a young girl where eclampsia came on without any warning in the way of headache, eye symptoms, or albuminuria. He explains the convulsions as being due to the myxœdematous state, but believes that there was a parathyroid as well as a thyroid insufficiency.

Fruhinsholz and Jeandelize,[1] in a valuable paper, have fully considered the possible relationship of thyro-parathyroid insufficiency to eclampsia in the light of Herrgott's case, and from the results of experimental removals of the thyroid in animals. They have not used thyroid extract in eclampsia, but consider that this form of treatment would perhaps be indicated if convulsions occurred in a patient who showed no thyroid hypertrophy, and particularly if there was no albumen in the urine.

Herrgott's case is noteworthy because it confirms the results of some very interesting experimental work done on pregnant cats by Verstrœten and Vanderlinden, Lange, and others. These observers have shown that pregnant cats require for the maintenance of their health larger thyroids than non-pregnant animals. After removal of more than four-fifths of the thyroid in pregnant animals, tetany occurs, which soon passes off under treatment by iodothyrin.

The following is a very brief account of one of the most striking experiments performed by Verstrœten and Vanderlinden.[2] A partial thyroidectomy was done on a healthy young cat. Three years later the animal became pregnant. All went well till labour commenced, and then frequent attacks of general convulsions occurred. When death seemed imminent, 6 c.c. of fresh macerated sheep's thyroid was injected into the peritoneal cavity. An hour later the cat was decidedly better, and convulsions did not reappear. Next day a single fœtus was expelled, and the cat got completely

[1] Fruhinsholz and Jeandelize, *La Presse Médicale*, 25th October 1902.

[2] Verstrœten and Vanderlinden, *Ann. de la Soc. de Med. de Gand.*, 1897.

well. Verstrœten and Vanderlinden compared these symptoms in the cat to acute eclampsia in a pregnant woman.

Lange found that after large removals of the thyroid in animals both the kidneys and liver showed definite lesions, and he noted that iodothyrin exerted an undoubted influence over the so-called pregnancy kidney of women.

W. Bensen [1] has more recently studied some of the changes occurring in the various organs after thyroidectomy, and has sometimes found the renal tubules blocked up by cylinders of colloid substance. This is a suggestive point, because very similar appearances have been described in the kidneys of patients who have died of eclampsia. I may specially mention a case recorded by the late Angus Macdonald, where Professor Hamilton made a most careful examination of the kidneys.[2] Blum has shown experimentally that the removal of the thyroid in animals is followed, after some months, by death from chronic interstitial nephritis, the reason being that the kidney fails in its attempts to eliminate certain toxic substances which the thyroid normally neutralises.

It is now generally agreed that the lesions found in the liver, kidneys, and other organs, both after removal of the thyroid, and also in fatal cases of eclampsia, are merely characteristic of the effects of some toxæmia.

I have now brought forward some clinical and experimental evidence which seems to me to point to the possible origin of some cases of eclampsia at least, in thyroid and parathyroid insufficiency. But the adoption of such a view is not necessary in order to justify the use of thyroid extract in the intoxications of pregnancy.

When a pregnant woman threatens to become eclamptic, certain principles of treatment are clearly indicated, and I do not know of any single drug which so fully fulfils all

[1] Bensen, *Virchow's Archiv.*, 3rd November 1902.

[2] Macdonald, *Heart Disease during Pregnancy*, London, 1878, p. 243.

these indications as thyroid extract. A substance which so powerfully stimulates both metabolism and elimination; increases largely the secretion of urine and the excretion of urea and other urinary bodies; acts as a specific vaso-dilator, thus leading to perspiration and lowering of the blood-pressure; cannot fail to prove a potent means of safeguarding the pregnant woman from the effects of toxic poisoning.

In testing the efficacy of any remedy it is necessary to be sure of two things: (1) the therapeutic activity of the preparation employed must be assured; and (2) the drug must, in all cases, be given in doses sufficiently large to produce physiological effects. With regard to thyroid extract, I do think that a reliable preparation of uniform activity is at present obtainable. It is also difficult to decide whether dry thyroid extract—which contains the whole of the active constituents of the gland—is to be preferred to any of its derivatives, such as iodothyrin, thyroglandin, thyrocol, etc., all of which bear the specific qualities of the gland. In myxœdema, iodothyrin is quite sufficient as a substitute for the normal thyroid secretion, though it is not certain that this principle represents the whole activity of the gland. Thus if one could obtain a uniformly reliable extract of the healthy thyroid of the sheep, it might be chosen, for the thyroid gland may have other functions than its secretion.

Again, with regard to dosage, thyroid extract—even when a preparation of undoubted activity is being used—seems to be sometimes almost devoid of effect, unless very large quantities are given. As the remedy is commonly regarded as a dangerous one, adequate doses are not always used; hence the results are disappointing. The uncertainty of the drug itself, and the very variable quantity required, under different circumstances, to produce symptoms of poisoning (thyroidism), seem to be factors of great importance in the question of thyroid medication.

In regard to their reaction to thyroid extract, women who

suffer from pre-eclamptic symptoms during pregnancy sometimes readily exhibit symptoms of thyroidism, and in this respect they resemble myxœdematous persons. Normal individuals are seldom so susceptible to the effects of the drug.

The action of a reliable thyroid preparation, when given in adequate doses, is a very precise one, and definite symptoms are always produced. Acceleration of the pulse is a constant and early effect, and coincidently there is increased warmth of the skin (vaso-dilatation), perspiration, diuresis, and often a rise of temperature. If such symptoms do not appear, one must conclude either that the drug is inert, or that it has not been given in sufficient doses.

In the intoxications of pregnancy, whether evidenced by albuminuria, or only by other symptoms, thyroid extract must be pushed till it produces its full effects upon the circulation. Otherwise, there will only be partial, if any, improvement in the symptoms, and a useful means of treatment may be discontinued just when it is beginning to do good.

In the cases of eclampsia or impending eclampsia, treated by thyroid extract, which I have previously reported, I claimed that by producing symptoms of thyroidism, the re-establishment of the secretion of urine was secured. This seemed to be an important point, and I regarded the marked diuresis which followed the use of the remedy as one of its most useful effects. But a recent experience has thrown some new light on the matter, and has indicated what I believe to be a more essential action of thyroid extract in eclampsia.

The case I refer to was one which I attended almost daily during the last two months of pregnancy, and the patient was treated with small doses of thyroid extract in anticipation of eclampsia. She was twenty-five years of age, and it was her second confinement. Her first confinement was complicated by severe eclampsia, and resulted in the birth of a premature stillborn child,

In the second pregnancy, the auto-intoxication, while being treated with small daily doses of thyroid extract (grs. 2½-7½), twice caused serious anxiety; and, on one occasion, about three weeks before labour, there was complete, though transient, loss of sight in one eye. Much larger doses of thyroid extract controlled the symptoms, and everything progressed favourably. The labour passed off without any unusual symptom, except that it was practically painless throughout, and a living infant was born. Thyroid extract was then discontinued.

The mother was allowed to nurse the baby, and all went well till the sixth day of the puerperium, when a very severe eclamptic fit occurred. Thyroid extract was again given in large doses, and recovery gradually took place. On the nineteenth day of the puerperium, death occurred quite suddenly and unexpectedly from symptoms suggestive of cardiac thrombosis. A post-mortem examination was not obtained.

There were several remarkable features about this case, but meanwhile I only wish to refer shortly to the effects of thyroid treatment, as evidenced by the variations observed in the urine. The urine was carefully examined almost daily for three weeks previous to labour, and also during the first twelve days of the puerperium. The quantity secreted in the twenty-four hours was always ascertained.

The following points were noted:[1]—

1. When pre-eclamptic symptoms—headache, amaurosis, etc.—were present, the urine secreted was of a very low specific gravity (1010), and the urea excretion was also strikingly diminished (·7 per cent.). There was only the faintest trace of albumen on these occasions, and there was

[1] The various specimens of urine were examined for me at the laboratory of the Royal College of Physicians, and I have to express my indebtedness to Dr Noël Paton and his assistants for the trouble and interest they took in the matter.

none at all at other times till after the fit, when a somewhat larger amount appeared.

2. Invariably after thyroid extract was given, the specific gravity of the urine was raised (1020-1030), and the urea excretion was increased—sometimes enormously (3·4 per cent.), but always to some extent.

3. On the occasion when amaurosis was present, and eclamptic seizures were evidently impending, the toxicity of the urine (sp. gr. 1010, urea ·7 per cent.), was roughly estimated by injection into the jugular vein of a rabbit (Bouchard's method). This urine was found to be very feebly toxic.

4. The toxicity of the urine passed on the following day, after large doses of thyroid extract had been given (sp. gr. 1030, urea 3·4 per cent.), was similarly estimated, and was found to be remarkably toxic.

5. Diuresis was observed to follow very precisely after the large doses of thyroid extract, and the solid general œdema which was present was obviously reduced.

The notable increase in the elimination of urea under thyroid extract must, I think, be regarded as the most valuable action of the remedy in these cases, because it is now well recognised that the urea excretion fluctuates *pari passu* with the elimination of the toxic substances. The impression still seems to prevail that albuminuria is a constant danger signal in cases of impending eclampsia, but it is certain that sometimes there may be grave toxic poisoning before any warning is given in this way. It is far more important to estimate the urea excretion.

In the above-mentioned case, as a result of repeated examinations of the urine, it was found that the most striking features on every occasion when serious symptoms were impending, were (1) the exceedingly low specific gravity of the urine, and (2) the greatly diminished urea excretion. No

albumen, or only the faintest trace, was detected. When eclamptic symptoms are impending, or have actually appeared, the quantity of urine secreted in some cases is not very greatly diminished at first, and it may contain no albumen. The important point is that the secretion, under such circumstances, is practically water. This is probably often the earliest indication of renal inadequacy in eclampsia—the inability of the kidneys to eliminate the solid constituents of the urine.

Thyroid extract seems to possess a definite action in favouring the elimination of the solid constituents of the urine, which, for some reason, are locked up in the tissues, and in this way certain poisonous products of metabolism are also passed out of the body. These substances must be regarded as the cause of the auto-intoxication and subsequent convulsions.

Even in cases of normal pregnancy, where slight symptoms of auto-intoxication may possibly develop under an excess of proteid food, it would seem rational to administer thyroid extract as a form of prophylactic treatment in order to anticipate more serious trouble.

Dr Buist said that since Dr Nicholson had read his original paper before the Society, in which he had gone over a great deal of theoretical ground of a most suggestive character, though there was an amount of very debatable physiological matter, he himself thought the matter must be settled practically. Personally, he had not much sympathy with the modern doctrines of auto-intoxication, or at least the doctrine in its modern form. It seemed to him to be no great advance on the old humorists' theories. As far as the observations at present recorded went, they seemed to him to be open to serious difficulties, and to present many sources of fallacy. With regard to the cases cited in Dr Linn's paper, there was not much to be noted except for the slight increase in the total quantity of urea which varied greatly

from day to day. His impression was, that if he had used more of the thyroid in the first case he would have lost his patient, the pulse rate giving cause for alarm after delivery. The preparation of thyroid he had now, had always given him satisfactory results in other cases. In the second case, the patient was not under observation sufficiently long to enable them to come to any conclusion. But it had been given in what was supposed to be a satisfactory preparation, and had caused no diminution in the œdema, and no change in the quantity of albumen. The pulse rate had not shown the notable slowing Dr Nicholson had pointed out. In the first case, it was from 68 to 84 till just before delivery, when it ran up to 108. The patient in this case had mitral regurgitation which was probably the reason why the thyroid extract, if it had any effect, proved alarming. In the second case the pulse varied from 60 to 80. The temperature was normal throughout in both cases.

Dr Keppie Paterson said he had been using thyroid in cases of obesity largely. He had always used thyroid tablets and had found them active, but in some cases, in order to obtain good results, it was necessary to push the drug until there were symptoms of thyroidism, depression, headache, great feeling of weariness, sometimes intense weakness. All cases to whom thyroid was being given should be carefully watched, as it was a powerful remedy. In one case of anæmia in which he had given it, the patient developed melancholia. Dr Nicholson was strong on the fact that thyroid produced diuresis, getting rid of the auto-intoxications which are said to be the cause of eclampsia. Was it not possible to get rid of any effete products much more easily with other remedies? Cases of albuminuria accompanied with dropsy were easily recognised, and could be treated at once and easily; and, so far, he had not had any case of albuminuria with dropsy treated during the pregnancy become eclamptic. Those cases where there was practically no dropsy were the most dangerous ones. As to auto-intoxication,

it has yet to be proved that thyroid meets that mysterious something that was the source of the eclampsia in any specific way, and as far as his experience went, he thought any benefit resulting from its administration in the cases cited might have been obtained by milk diet and drugs, as, for example, acetate of potash, scoparius, etc. There was no doubt that thyroid had a very marked effect on tissue metabolism, and he would be afraid lest this might load the blood with the products of metabolism, and thus, along with the auto-intoxication considered to be the cause of the eclampsia, make matters worse rather than better.

Dr Church said they were much indebted to the two gentlemen for their papers. They had certainly passed over a large field of pathology this evening—from the theories of the humors to the latest one of physiological chemistry. He had not had experience of treating eclamptic patients with thyroid, but had had considerable experience in dieting them; and he could not but think that in the case where a fit had followed a highly nitrogenous food, that the eclamptic might have been better treated entirely by diet rather than by thyroid. He believed that by dieting, patient likely to have eclampsia might be quite guarded against its occurring, and mentioned a case where the patient had nearly died from eclampsia in her first pregnancy. He put her on milk diet from the commencement of her second pregnancy, she had lived upon it entirely for the nine months and the labour had been easy without a symptom of eclampsia, and a healthy child was born. In the healthiness of the child, produced by the careful dieting of the mother, and in the thyroid physiology of the child itself, there was protection to the mother in proportion to the health of the child itself. Therefore, before putting much confidence in thyroid as a safeguard in these cases, it would be wiser to attend to a healthy metabolism by the simplest diet. It might be a question, too, to what extent the fœtus *in utero* might be affected by giving

larger doses of thyroid to the mother. He had no doubt that many advantages might accrue from the work of Dr Nicholson. He did not agree with the suggestion of giving such medicines as digitalis in these cases, for the arterial tension might already be high. It had occurred to him that in cases of epilepsy brought on by injudicious feeding, a good deal might be done by dieting the patient carefully.

The President thanked both gentlemen in the name of the Society for their interesting papers. The subject was one of great difficulty. Dr Linn had called his cases eclampsia during pregnancy. Our knowledge of the subject would have been further advanced had every observer been more definite as to the cause of the albuminuria in each particular case. Some cases were due to organic disease of the kidneys; in some the eliminating organs were not very efficient—able to overtake the work thrown on them under ordinary circumstances, but not the extra amount during pregnancy; but there were also cases of albuminuria of pregnancy about which there was much to be learned, the etiology of which was as yet little understood. Some of those cases seemed to be intimately connected with the fœtus, disappearing sometimes when the fœtus died. In most of the cases of albuminuria of pregnancy the condition did not recur in succeeding pregnancies. Albuminuria is only a symptom which was associated only in certain people with eclampsia. In some cases a large amount of albuminuria was found, and yet fits never supervened. He cited one case of a lady who was albuminuric, but who had subsequently had six children, all born at full time and quite healthy, and the patient had never had any tendency to fits. Had thyroid been used in this case it would have been credited with the result. For the production of fits it was necessary to have some peculiar condition of the nervous system, some poisoned condition of the blood, and some source of reflex irritation. When Dr Nicholson was reading his paper, it had occurred to him that the second case

Dr Nicholson had mentioned was one of very strongly marked uric acid diathesis, in which condition one from time to time saw peculiar conditions arising, and he did not think one would be justified in saying that in this case there was thyroid inefficiency. There were certainly cases in which there was thyroid inefficiency, and in which eclampsia followed, and in which, with the administration of thyroid, there was recovery. A good many cases of this sort had been recorded by different observers. There was not the slightest doubt that thyroid was a most valuable remedy. Dr Nicholson was correct in pointing out that one needed to be sure of the preparation one was using, and one needed to be extremely cautious in the use of it, for serious results had followed from pushing it too far. Some people could stand much larger doses than others. In several cases apart from pregnancy, when he had tried various drugs to cause diuresis, he had failed until he ordered thyroid; this produced a copious flow of urine, and recovery had followed. It is certain that this drug has a powerful influence on renal secretion. It was only by the record of a large number of cases, and by careful observation and discrimination as to the causes of albuminuria in each case that we would eventually attain to any true idea of the value of thyroid in these cases.

Dr Linn, in reply, thanked the Society for their very kind reception of his paper.

Dr Nicholson, in reply to Dr Keppie Paterson, pointed out that he had not considered the marked diuresis following upon the use of thyroid extract as the most essential or useful thing in those cases. In his previous cases he had noticed that by producing symptoms of thyroidism, the re-establishment of the secretion of urine was secured. The arrest of the renal secretion was really the "fuse" of eclampsia, and there was a good deal of evidence to show that this was brought about by the action of the toxins in constricting the blood-vessels—perhaps especially the vessels of the kidney. In this way the blood supply to the

kidney being shut off altogether, suppression of urine resulted. The toxins eventually stopped their own excretion. Hence, to get the kidney to secrete again, it was necessary to relax the vessels, and in his own experience proper doses of a reliable thyroid preparation would do this more certainly and more permanently than anything else. His last case, however, had thrown further light upon the action of thyroid in eclampsia. He had noted that while the pre-eclamptic symptoms were present, the urine secreted was of very low specific gravity, and the urea excretion was also exceedingly low. Invariably after thyroid extract was given, the specific gravity of the urine was raised, and the urea excretion was increased—sometimes enormously, but always to some extent. The elimination of urea under thyroid extract was in his opinion the really important point, because, although urea was not the toxic substance, yet the toxins were excreted *pari passu* with the urea. The diuresis, which constantly followed the use of thyroid extract, was almost certainly the result, both of the vaso-dilatation, and also of the increased amount of urea passed through the kidneys. Urea was a natural diuretic of great power. Dr Lackie had suggested that the patient might be hysterical, but although he had not seen the fit he had no doubt whatever that it was genuine eclampsia, just as in the first confinement. The absence of albumen in the urine in these cases, in the light of recent research, meant very little. One might have very severe cases of eclampsia where there was no albumen, or only a small amount after the fits. In his last case the faintest trace of albumose appeared at various times before the fit; afterwards there was a somewhat larger quantity. The exceedingly low specific gravity of the urine, and the greatly diminished amount of urea in it, were the striking features on every occasion when grave symptoms were impending. The action of thyroid extract was always a precise one when the urine was like this, and he thought it must be a good

thing to get the urinary solids out of the body. He was very much interested in Dr Ritchie's remarks. One must not lay too much stress upon one's own experiences and results, but he was convinced that thyroid was a most unreliable drug. The remedy would not be of use in all the albuminurias of pregnancy, but only in those where the albumen was a symptom of auto-intoxication. In all his own cases already recorded, there had been marked general œdema of a solid kind, and this might be a matter worth bearing in mind, in relation to a possible thyroid insufficiency. The main point was to push the remedy till symptoms of thyroidism appeared, in order to make sure that the drug was acting properly.

MEETING IV.—FEBRUARY 11, 1903.

Dr JAMES RITCHIE, *President, in the Chair.*

I. The following gentlemen were elected Ordinary Fellows of the Society:—A. L. White, L.R.C.P. & S., Edinburgh, Royal Maternity Hospital, Edinburgh; Robert B. Johnston, L.R.C.P. & S., Edinburgh, Royal Maternity Hospital, Edinburgh.

II. *Sir Halliday Croom* showed (1) a LARGE FIBROID from a patient six months advanced in pregnancy. The size of the tumour prevented the least chance of delivery *per vias naturales*, and it was therefore decided to remove it. He had hoped to have postponed the operation till seven months were passed, but the patient developed an acute attack of peritonitis, and immediate operation became necessary. The child, of course, only lived a very short time.

(2) FOUR SPECIMENS OF UTERI REMOVED BY VAGINAL HYSTER-

ECTOMY, (*a*) from a case sent to him as a case of cancer of the uterus. The woman was emaciated, cachectic, with a profuse, offensive discharge, and suffered from periodic pain. The disease appeared to be undoubtedly cancer, and a pathologist reported on a portion of the growth submitted to him that it was cancerous. The whole uterus was removed by vaginal hysterectomy. On opening the specimen afterwards it was found to be simply a fungating, sessile, submucous fibroid, and not cancer. This was the second time the same thing had occurred in his own limited work, and he felt sure it must happen more frequently in the practice of those with a large amount of hospital work, and that mistakes in diagnosis in such conditions were often unwittingly made. (*b*) Advanced cancer of the cervix, in which he had operated at the express desire of the doctor and the patient's friends. The uterus was enlarged and contained an ovum, and was very much fixed. The case was unsuccessful, the patient not long surviving the operation. (*c*) From a case he had seen in consultation, in which he had no notion that there was any cancer. The patient, however, insisted on a specimen being removed for microscopic examination, for she had suffered from slight hæmorrhage from time to time on using a vaginal syringe. The microscope showed the specimen to be epithelial cancer. The uterus was removed without any difficulty, and he should watch the case with the greatest interest, for it was the first case he had had in which there was good hope of the whole disease having been completely removed. (*d*) From a patient sent to him with profuse hæmorrhage and emaciation. The diagnosis that it was not cancer was easy. On removal, a sessile submucous fibroid and a sessile subperitoneal fibroid were found. The interest in the specimen lay in the fact that it was a large one to remove *per vaginam.*

(3) A DOUBLE HYDROSALPINX from a patient who had suffered from most profound dysmenorrhœa, requiring chloroform at her menstrual periods time and time again. She married, and the

dysmenorrhœa became worse and worse, and she was a chronic invalid, needing chloroform during the whole time of the menstrual period. He removed the tubes and ovaries, finding what was quite unsuspected, a double hydrosalpinx, and told the patient she would have no return of the pain, but she has become increasingly worse ever since.

(4) A FIBROID from a patient aged 35, from whom he had removed ovaries and tubes some few years ago, after which menstruation had ceased for three months, and had then recommenced, and the tumour had developed much since that time.

III. *Dr Berry Hart* showed a FIBROID the size of a six months' pregnancy. There was a hydrosalpinx on the right side, and the main development of the tumour was in the left broad ligament and pelvic peritoneum. After the right side was ligatured and the uterus cut across, the main mass of the tumour was easily shelled out of its bed and removed. There was some trouble in arresting oozing from the tumour, but pressure ultimately accomplished this. Probably it would have been better to have done panhysterectomy. The patient is making a good recovery. (2) PYOSALPINX on the right side. During separation of the dense adhesions a little oozing of pus happened, and Dr Hart therefore washed out and drained with gauze through the vagina. The pus was found to be sterile.

IV. *Dr Scott Macgregor* showed a FIBRO-SARCOMA OF THE UTERUS removed by panhysterectomy from a patient aged 28. Two years previously she had consulted a surgeon who had diagnosed a tumour, and had opened the abdomen but had not removed the tumour. It had grown rapidly in the last two years—the weight shortly after removal was 14 pounds. There was some difficulty in the removal of the growth, but the patient was doing very well.

V. *Dr James Graham* showed an OVARIAN TUMOUR which, through the kind permission of Dr Haig Ferguson, he removed from a patient æt. 52. On opening the abdomen the tumour was found to be the size of a seven months' pregnancy. On pulling it out of the abdomen the uterus came with it, and the tumour was found opening up the layers of the right broad ligament, and closely incorporated with the right border of the uterus. To have separated the tumour from the uterus would have entailed leaving an extensive, raw, and bleeding surface, the edges of which could not have been brought together; and it was therefore considered that the prognosis would be better if the uterus were removed along with the tumour. This was accordingly done, and the uninterrupted recovery which the patient made justified this mode of procedure.

VI. *Dr George Robertson* of Dunfermline showed AN ABORTING TUBAL MOLE AND A PAROVARIAN TUMOUR removed from a woman, æt. 40, who had suffered from symptoms suggestive of an extra-uterine pregnancy. She had had six children, and had missed her last period by a fortnight. She was suddenly seized with an attack of pain, and had intense tenesmus. The patient had been kept under observation for a fortnight, and then, on opening the abdomen, bleeding was found to be going on. When the clot had been removed the small parovarian first presented itself and was removed, and then the aborting tubal mole was found. He drained through the vagina, but as there was still some oozing at the end of the operation, he had put in a Mickulicz tampon through the abdominal wound. The patient did well.

VII. *Dr Haultain* showed SPECIMENS DEMONSTRATING VARIOUS DEGENERATIONS OF FIBROIDS:—(1) calcareous; (2) cystic (unilocular); (3) cancer associated with fibroid; (4) œdematous tumour; (5) pregnancy, with fibroid, in which

case he had attempted to cause abortion, but had failed; (6) case showing a subperitoneal, a mural, and inside the uterus a small polypus—the latter evidently the cause of the hæmorrhage; (7) a multinodular fibroid with two ovarian cysts; (8) multinodular fibroid, giving rise to pressure; (9) sarcoma of uterus, in which the mass had projected through the cervix, and which, he thought, had come from a pre-existing myoma.

VIII. SOME EXPERIENCES IN THE GYNÆCOLOGICAL SURGERY OF THE ABDOMEN.

By James Haig Ferguson, M.D., F.R.C.P., F.R.C.S. (Edin.), Lecturer on Midwifery and Diseases of Women, School of Medicine of the Royal Colleges, Edinburgh; Gynæcologist, Leith Hospital; Assistant Physician, Royal Maternity Hospital, Edinburgh; Vice-President, Edinburgh Obstetrical Society.

I venture to record to-night a few experiences in gynæcological abdominal operations, taken very much at random from my records, which I hope may be of interest to the Fellows of the Society, and which may serve at least as a text for the ventilation of the experiences and views of some of the other Fellows. In attempting to classify such experiences in a way likely to be useful or interesting, I would divide them into a series—(1) according to the class of operation which furnished such experience during the actual operative procedure; and (2) in respect to after-treatment and subsequent progress in so far as these latter yielded anything worthy of special record.

The ordinary details of a straight-going case of abdominal section are so well known and understood that, although no two cases are ever exactly the same in detail or in subsequent progress, yet the general principles which govern such procedures remain much the same all through, and render the description of one case equally, or almost equally, applicable to most others. I have therefore, in selecting the material

for this paper, chosen those cases which have differed markedly in certain details from the ordinary run of what might be termed "normal cases," thus affording in some particulars exceptions to the general rule of comparative uniformity. I must apologise for the somewhat disjointed way in which the following notes have been put together, as the paper had originally to be written on comparatively short notice and amid much pressure of other work, and I have had little time since for any alteration or amplification:—

I. *Ovariotomies, Oöphorectomies, Exploratory Incisions, etc.*

(*a*) The necessity for opening the abdomen in a woman suffering from acute infectious disease must be a rare one. The following instance admitted of no alternative:—

Mrs W., æt. 35, was suffering from persistent sickness, which was at first thought to be due to a retroverted gravid uterus, as she had not menstruated since her last child was born, four months previously, but she had some slight hæmorrhagic discharge on presenting herself for treatment. For two months she had been sick only before meals, but a week prior to her admission the sickness became persistent. The body of the uterus was retroverted, the cervix was soft, and the uterus considerably enlarged. The uterus was replaced, and a pessary introduced, and the sickness was somewhat relieved for a time. Soon afterwards the sickness returned in an aggravated form; she began to rave, the pulse went up to 120, and the temperature likewise rose. She next complained of abdominal pain, and on further examination a cystic tumour, very tender on pressure, was found lying alongside the uterus in the pelvis. The diagnosis of ovarian tumour with twisted pedicle was made. At the same time desquamation was observed on the fingers, and this subsequently became general, and was associated with albuminuria. It thus became pretty obvious that she was suffering from scarlet fever. As

the patient was manifestly dying from the abdominal condition, it was decided to open the abdomen to give her the only chance of recovery. An ovarian tumour, perfectly black from effused blood, and with a twisted pedicle, was found and easily removed. The patient's urgent symptoms were much relieved, but unfortunately she died two days thereafter. I know of no other case exactly comparable to this one.

(*b*) Opening the abdomen twice (apart from the question of operating for ventral hernia). I have on four occasions opened the abdomen a second time in patients on whom ovariotomy had previously been performed. In only one of these cases had I the opportunity of doing it on both occasions myself. In two cases it was for recurrence of ovarian tumour —one a simple ovarian tumour (associated with a pyosalpinx as large as a banana), and the second a papilloma. In a third case it was to remove a fibroma from the broad ligament in a patient on whom double oöphorectomy had been performed five years previously for disease of the appendages; and in the fourth case it was for the purpose of doing abdominal hysterectomy in a patient from whom the ovaries had previously been removed for a fibroid without effect. The reason why the oöphorectomy had failed in this case was seen to be that a large submucous development had taken place. The greatest care is necessary in opening the abdomen a second time, as, apart from the absence of the usual landmarks while cutting through the old cicatrix, I have on two occasions seen the small intestine closely adherent to the parietal peritoneum behind the old scar, and have found the greatest difficulty in separating the adhesions, in one case finding it necessary to leave the peritoneum adherent to the gut by excising a portion from the parietes. Professor Kynoch brought the question of repeated ovariotomy recently before the Society in an interesting and suggestive paper in Vol. XXVII. of our *Transactions.*

(*c*) While we frequently see a patient exhibit transient pallor and cardiac inhibition while the ovaries are being manipulated or when the ligature is being tightened, it is seldom that an operation has to be abandoned on account of these symptoms producing alarming manifestations. The following is an example of an operation having to be stopped for such reasons:—

The patient, A. R., æt. 29, had suffered from intolerable dysmenorrhœa and more or less constant pelvic pain for nearly fifteen years, and had suffered many things at the hands of many physicians; but in spite of prolonged treatment she steadily got worse, and both ovaries were enlarged and tender. At her urgent request I opened the abdomen, and found the ovaries matted with adhesions. While attempting to separate the adhesions on the right side and draw the ovary to the surface, the patient manifested all the symptoms of death from syncope. She was with difficulty resuscitated, and deeply anæsthetised, as it was thought that the syncope might have resulted from deficient anæsthesia on the first occasion. A second attempt was then made to free the ovary, when the same symptoms again occurred, and the same difficulty was experienced in bringing her round. Ether and strychnine were injected, and ether was now substituted for chloroform as the anæsthetic. A third attempt was now made to proceed with the operation, followed by an exact repetition of the same symptoms, and the patient was again restored with difficulty from apparent death. I therefore determined in the circumstances to proceed no further, but quickly stitched up the abdomen, and sent her back to bed. She made a good recovery, and the interesting feature of the case now is that the pain has completely disappeared from the right side where the adhesions had been broken down. The pain, however, continues on the left side as before—that is to say, on the side where the ovary had not been touched. She is anxious for another operation, but I have

counselled her to leave well alone in the meantime, but possibly she may persuade some other gynæcologist to interfere, and I only hope that he will not have such an anxious time with her as I had. This case further affords an interesting example of the good effects which sometimes result from conservative gynæcology. One is, I fear, sometimes tempted to think that the mere breaking down of adhesions and liberation of adherent structures is but a small thing to do after opening the abdomen, and that something more radical should always be carried out, something, so to speak, more worthy of the occasion. I am strongly of opinion, however, that such views are erroneous, and that where at all possible conservative treatment should be the first and only consideration.

(*d*). We do not often find any strikingly abnormal condition in the broad ligament during an operation. The following, however, is an example of a rare abnormality, which certainly gave Dr Fordyce and me considerable anxiety at the time, as at first sight it looked as if we had excised an inch or more of the right ureter. The case was one of simple ovariotomy for a parovarian tumour, and Dr Fordyce kindly assisted me at the operation. I have already shown the specimen to the Society. It consisted of a structure like a large blood-vessel, was of the calibre of the brachial artery, and lay in the upper part of the broad ligament, being probably a dilated Gartner's duct (Wolffian duct). Dr Shennan, who examined it, reported as follows:—"The wall of the tube is composed of several layers of unstriped muscular tissue with a good deal of fibrous tissue as well. The lining is not at all distinct, but has most probably been endothelial or flat epithelial. It is very difficult to say whether it is blood-vessel or not; if so, it is not artery, but might be vein. It resembles somewhat other vessels in the section, but does not possess any elastic lamina as they do; so that I would just diagnose it as a tube with muscular walls and probably endothelial lining. The ureter is the most nearly

related tube to it that I know." Clearly it could not be the ureter, as, in the first place, it was far from the normal situation of the ureter; and, secondly, the patient recovered without a bad symptom, and remains perfectly well, nearly two years after the operation. Its resemblance to the ureter bears out the contention that it was a persistent Wolffian duct owing to their close developmental relationship. Nagel is inclined to believe that the condition of double ureter which has been described by several writers is in reality a condition of persistent Wolffian duct. It may be noted that there were no varicose veins visible in the broad ligament of this patient at the operation.

(*e*) As a rule, in abdominal section we have no difficulty in recognising when we have entered the abdominal cavity. There are two circumstances which render this difficult—(1) when an ovarian cyst is so closely and intimately adherent to the parietal peritoneum that the line of demarcation between them is wanting or indefinite. It is comparatively seldom, however, that the adhesions are so universal that it is impossible to distinguish between the tumour wall and the parietal peritoneum, as it was in the case I saw some years ago; (2) when there exists a localised encysted effusion, the result of tubercular or malignant disease, and giving the physical signs of an ovarian cystoma. This was specially marked in one case on which I operated some time ago. I had diagnosed an ovarian cyst, but it turned out to be a cystic effusion associated with malignant disease of the intestines. The danger in such cases is the stripping of the parietal peritoneum off the abdominal wall, under the mistaken idea that one is separating an adherent cyst. Since seeing such an accident occur in one case, I have found a good rule in doubtful cases to open the supposed cyst and ascertain its contents and nature. In the case above referred to the peritoneum was ¼ inch in thickness, and unless it had been deliberately cut through and the real relationships

discovered, the whole parietal peritoneum would almost certainly have been separated from the abdominal wall under the impression that we were dealing with an adherent cyst.

(*f*) Every one has had experience of the altered physical signs caused by the spontaneous intra-peritoneal rupture of an ovarian cyst, and even of the apparent disappearance of the tumour from this cause. Dr Haultain has fully discussed the question in an interesting paper read before this Society two years ago, and I would only express my opinion that such a rupture is an additional reason for immediate interference and not for delay.

(*g*) Puncture or laceration of intestine during operation is fortunately a very rare occurrence. The only case of the kind I have personally met with was where an over-zealous assistant, in removing a gauze swab from the abdomen with a pair of Kocher's forceps just before I finally closed the wound, picked up not only the swab but a coil of small intestine lying underneath it, and inflicted two lacerated wounds on the gut. Fortunately, the patient was none the worse for this accident, as the rents were at once successfully repaired, but, of course, it gravely added to the risk of the operation. It is, I think, a lesson to us that the fingers are the best forceps for removing swabs, and, I fear, it has made me somewhat prejudiced, though perhaps unjustly, against Kocher's forceps.

(*h*) I have already recorded a remarkable case where an ovarian tumour was completely removed by abdominal section without opening the peritoneal cavity (see *Trans. Edin. Obst. Soc.*, Vol. XVI., p. 154).

(*i*) I may here note an interesting case where a cyst of the kidney, extending down into the pelvis, simulated an ovarian tumour. On examining the patient (Miss T.), a fluctuating swelling was found on the right side, and could be distinctly palpated by vaginal and rectal bi-manual examination. The diagnosis was arrived at from the facts that it could be pushed

up out of the pelvis, with which it seemed to have no connection, and that the colon gave a tympanitic note over the tumour when the latter was pushed up into the abdomen. There were no urinary symptoms, and the urine was normal in quantity and quality. As the tumour was a source of great inconvenience and distress to the patient, I removed it by an anterior incision in the right linea semilunaris, which enabled me (1) to palpate the left kidney, which was found to be normal, and (2) gave easy access to the diseased kidney, which was too large to have come through a lumbar incision. The patient now is in perfect health, able for all the duties for which she was incapacitated before her operation, now fully two years ago, and her urinary secretion is normal in every respect. It is worthy of remark that no urinary or constitutional symptoms were produced by the operation, no doubt owing to the fact that the diseased kidney had been partially functionless for some length of time previously. Usually, as is well known, cystic kidneys are bilateral, but in this case the other kidney was perfectly healthy, and has not shown any signs of becoming cystic since. The ureter of the diseased kidney seemed to be in all respects normal. Before leaving the subject of ovarian operations generally, I should like to compare my somewhat limited experience of the angiotribe with the ligature in dealing with the pedicle. I have never had the courage to close up the abdomen after treating the pedicle with the angiotribe alone, as the stump never gave me the impression that complete hæmostasis had been secured, and therefore I always took the precaution of using the ligature as well. To my mind the preliminary use of the angiotribe, however, is a distinct advantage, especially in thick pedicles, as it enables us to use much finer silk ligatures, a matter of no small importance.

II. *Extra-Uterine Pregnancy.*

There are some points in connection with extra-uterine pregnancy that I should like to refer to. In the greater proportion of those cases I have met with, retention of urine has been a prominent symptom, so much so that on meeting with a case of distended bladder two possibilities always occur to my mind—viz., extra-uterine gestation and a retroverted gravid uterus partially or completely incarcerated. On two occasions I have seen cases of extra-uterine gestation which, owing to the large abdominal swelling caused by the over-distended bladder, were supposed at first to be cases of ovarian tumour, the ectopic sacs in each case being entirely pelvic. In several cases of ectopic gestation I have found the opposite tube diseased, and in two cases containing pus. In one case, which I exhibited at last meeting of the Society, there was a large abscess of the ovary on the same side.

Severe metrostaxis, occurring in the course of the first week after operation for extra-uterine gestation, is a condition which I have occasionally met with. When it does occur it is much more profuse than what one is accustomed almost to expect after an ordinary ovariotomy or oöphorectomy. I am inclined to think it occurs chiefly in those cases where the decidual cast has not been thrown off from the uterine cavity before operation, and among my own cases I have only seen one exception. In one the metrostaxis was so severe as almost to cause the death of the patient. This patient was a married iii-para, her eldest child aged five, and her youngest seventeen months; the latter she was nursing when first seen. She had menstruated regularly during the last sixteen months. Her bladder was distended as far up as her umbilicus, her temperature was 101° F., and pulse 120, and a fluctuating swelling, tender on pressure, was felt behind the uterus. The uterus was empty and absolutely normal in size, as measured by the sound. From

the history of the case, and from the patient's symptoms and physical signs, the condition was diagnosed as a pelvic abscess. Having previously prepared the patient for the possibility of opening her abdomen, I opened the pelvic swelling through the posterior fornix vaginæ, when a large quantity of black clotted blood was evacuated instead of pus, as I had expected, and, though the ectopic sac could be now easily felt and recognised, it was impossible to deal with it from the vagina, and I therefore straightway proceeded to open the abdomen in the middle line. Immediately under the peritoneum an unusual structure presented itself to view, and seemed at first like large intestine. It proved, however (on passing a bladder sound) to be the bladder itself in an atonic condition as a result of its previous over-distension; and, though it had been kept empty by regular catheterisation during the previous twenty-four hours, it extended up in its empty and relaxed state to within 2 inches of the umbilicus. The gestation sac was found and ligatured, but some hæmorrhage persisted, which was at last found to proceed from the other tube, where another swelling of similar appearance, but smaller, was discovered exuding blood from the infundibulum. This was likewise removed, a drainage tube passed through the opening already made in the posterior fornix, the abdomen closed, and the vagina plugged with iodoform gauze. As a result of the severe loss of blood which had been sustained before operation, combined with the small loss during the operation, the patient was in a very collapsed condition, and had to be transfused on the table. She progressed well for three days, when a severe attack of uterine hæmorrhage came on. The hæmorrhage was so severe that, weakened as she was by her previous great loss of blood, it nearly caused her death, and I had to plug the uterus and administer ergotine to control it. It was at first thought that the blood came from the abdomen through the vaginal opening, but careful examination revealed its real source. The patient thereafter made a good recovery,

and is now—three years since the operation—in excellent health. Unfortunately the second sac was lost, and I have no absolute proof it was also a gestation sac. In my own mind I have no doubt of it, and it thus makes the second case where I have removed a gestation sac from either side in one patient at the same operation. (The previous case appears in *Trans. Edin. Obst. Soc.*, Vol. XXIV.)

The points of interest in the above case are:—

(1) Retention of urine.

(2) Normal size of uterus and the regular menstruation. The patient stated that she was always in the habit of passing shreds with her menstrual discharge.

(3) The flaccid condition of the empty bladder, reaching almost to the umbilicus, and thus liable to injury on opening the abdomen.

(4) The apparent two-sided gestation.

(5) Metrostaxis occurring on the fourth day after operation to such an extent as to threaten the life of the patient.

With such anomalous physical signs I fail to see how it was possible to diagnose extra-uterine pregnancy in this case, everything pointing more to a pelvic abscess. A curious point in the case is that the patient lactated for seventeen months in the hope of preventing another pregnancy, and yet, in the irony of fate, conception occurred in each tube.

In this connection I may mention another case of extra-uterine gestation which I drained *per vaginam after* opening the abdomen. Mrs McP., aged 32, had a well-marked extra-uterine sac about the size of a cocoanut. In attempting to remove it through the abdominal incision, the sac, which was densely adherent, burst, and a considerable quantity of bloody, stinking fluid escaped into the peritoneal cavity. The sac was removed, and to ensure complete drainage I opened the posterior fornix in the way so well described by Dr Brewis, and drained through

the vagina. The patient had an uninterrupted convalescence, the temperature never reaching 100° F.

I am inclined to think that in all cases where fœtid fluid escapes into the peritoneal cavity this method of drainage offers the best chance to the patient, and is preferable to drainage through the abdominal wound. In determining the question of drainage I have found gonorrhœal pus much less irritating to the peritoneum than the ordinary pyogenic organisms. It is important to note in vaginal drainage of abdominal cases that the head of the bed should preferably be raised so as to facilitate the drainage. On the other hand, where no drain has been left in the peritoneal cavity, and there is reason to fear the presence of septic fluid, it is of the highest importance in these cases to elevate the foot of the bed so as to spread the fluid over a larger area of peritoneum, and thus hasten absorption and prevent its accumulating in the pelvis. The further advantages of tilting the foot of the bed are the emptying of the pelvic veins, lessening any tendency to oozing, giving a fuller blood supply to the brain, and to a certain extent rendering the passage of flatus *per rectum* easier.

III. *Cases of Hysterectomy with After Complications.*

This opens the question of hysterectomy *v.* oöphorectomy in the treatment of fibroids. I am strongly of opinion that a fibroid does not require operation merely on account of its presence. Interference must be regulated by (1) the age of the patient, (2) the rapidity of growth, (3) the size, (4) pressure symptoms and pain, (5) absence or presence of hæmorrhage, especially when the hæmorrhage is not amenable to rest and drugs, (6) the question of degenerative or infective changes occurring in the growth, (7) the association of pregnancy with fibroid, (8) the possibility of axial rotation of a sub-peritoneal tumour, which latter would merely call for myomectomy. I am old-fashioned enough to believe still in the removal of the

ovaries for fibroids under suitable conditions. I have only been disappointed once in this operation, and in that case a sub-mucous polypus afterwards developed, producing profuse hæmorrhage.

The cases in which I would advocate oöphorectomy are in fibroids less in size than a five-months' pregnancy, where the tumour is manifestly growing rapidly in a woman under 40, but not tending specially to become intra-ligamentous, or under similar circumstances where the hæmorrhage is severe, and where we can eliminate the existence of a sub-mucous polypus. The operation of oöphorectomy is undoubtedly less dangerous than hysterectomy, in spite of all that may be said to the contrary, and, provided the operation is a thorough one, is usually satisfactory in suitable cases. I should always, however, get the consent of the patient to hysterectomy, in case, after opening the abdomen, this were found to be necessary or desirable. The younger the patient the more discomfort will she likely have after oöphorectomy, but I have seen no great, and certainly no permanent, discomfort ensue, and I do not believe the sexual feelings are altered, or that a woman is less a woman after oöphorectomy than any woman is after her natural menopause, and who would ever consider such women unsexed or sexless? In simple fibroids, of larger size than a five-months' pregnancy, where operative interference is called for, hysterectomy is the only alternative, but in a woman well above 40 palliative remedies should, so far as possible, be advised, trusting to the contracting and absorbing powers of the menopause. In those rare cases where fibroids grow after the menopause hysterectomy is clearly indicated.

I firmly believe that, in well selected cases on the lines indicated, oöphorectomy will give excellent results in fibroids, and, such being the case, I contend that it is only just and fair that a patient should have the benefit of the less severe operation where at all possible to do so. An argument advanced

against oöphorectomy is that fibroid tumours are liable to become malignant. There is, however, no definite proof of this; a large proportion of cases described as sarcomatous degeneration of fibroids are really infected fibroids. I have met with one such infected case, apparently the result of Apostoli treatment. I have seen diabetes develop in connection with a large fibroid after the menopause, and also multiple cerebro-spinal sclerosis, and one might almost as well say that these diseases, developing in such circumstances, were caused by the fibroids. I have recorded a case of carcinoma arising in the cervix of a uterus containing a fibroid in the fundus, and this seems to be not a very uncommon combination. The two conditions, however, are quite distinct, and I have never seen a demonstration of a fibroid which had become malignant.

I venture to record the following case of hysterectomy, as it has several points of interest:—

The patient, M. P., æt. 41, had a large interstitial fibroid tumour reaching up above the umbilicus, and causing pressure symptoms. As the tumour was growing pretty rapidly, and the pressure symptoms were increasing, the condition clearly called for hysterectomy. In reference to this I should like to call attention to the great importance of preparing patients beforehand for such a serious operation as hysterectomy. I think it was Dr William Duncan, of London, who first drew attention to the possibility of mitigating the dangers of heart failure and shock after such operations by the administration of strychnine for several days before and after the operation. I can corroborate this observation, and believe such preparatory treatment to be an invaluable aid in such cases. The strychnine can either be given by the mouth or hypodermically. There was nothing calling for remark in the operation on the above case of M. P., but it is more to her subsequent progress that I desire to call your attention. She was operated upon on 12th February 1902, and it was not until 20th August of the same

year that she was discharged well and able to go about her usual duties. The operation was done by Kelly's method, and subsequently an abscess formed between the layers of the broad ligament and around the stump of the cervix which was left. This I ascribe to some unsatisfactory catgut which was used to stitch up the broad ligament. I generally use, and much prefer, fine silk for this purpose, as it can be thoroughly sterilised. For four months after the operation the pulse varied from 112 to 140, and the temperature fluctuated from a little above to a little below 101° F. I opened the abscesses freely on several occasions, both *per vaginam* and through the abdominal wall. About four months after the operation she had an attack of complete intestinal obstruction with great distension of the abdomen and copious stercoraceous vomiting. All these alarming symptoms rapidly disappeared after evacuating a large collection of pus from the pelvis. The extraordinary thing is that after such a long period of suppuration and pyrexia the patient completely recovered without any complication arising in any internal organ, and that she never had any bed-sores, which latter fact says much for the careful nursing she received.

The largest fibroid tumour I have removed was one weighing 28 lbs., which I have already shown to the Society. The patient, Mrs J., had suffered from it for nearly twenty years, and its growth had been so gradual and steady that it forced almost all the intestines into a large hernial sac in front of it, the tumour itself filling practically the whole of the original abdominal cavity. The patient's condition was such that she could not have lived long owing to pressure symptoms and commencing ulceration of the skin of the abdomen, which was so thin from the distension that it looked as if on the point of giving way. The tumour was easily removed, but the point of interest was that, owing to the prolonged pressure, the muscular tissue of the abdominal wall had become atrophied; the recti were displaced into either flank, and there was nothing but skin and

fibrous tissue to unite in closing the wound, so that, although the tumour was removed, there was no possibility of curing the hernia. In spite of this, however, the patient is now fairly comfortable, and fit for her duties, with the aid of a specially constructed abdominal belt. During the convalescence of this patient an interesting thing occurred which may be worth while recording. She had complained for some days of rectal pain, and one day during a motion of the bowels she alarmed the nurse by calling out in great pain, and complaining of something sharp and cutting passing out of the bowel. The nurse on examination found a considerable quantity of blood in the bed-pan, and on investigating the stool found a piece of broken white porcelain about an inch long (which I now show). There was no article of china or porcelain, broken or unbroken, corresponding to this in the house, and apparently the patient must have in some mysterious way swallowed it, though she was quite unaware of ever having done so.

Before leaving the question of fibroids I would just add that I have only met one case of sequestrated fibroid. Its connection with the uterus had been completely severed, and it was attached to the appendix vermiformis by an adhesion. The tumour was completely calcified, as seems to be so often the case in sequestrated fibroids.

IV. *Complications and Points of Interest in After Treatment and Subsequent Progress.*

(*a*) *Mania after Ovariotomy.* A paper of much interest was read before this Society by Sir Halliday Croom on the "Psychoses following Abdominal Operations," which must still be fresh in the memory of those who heard it, and in this connection I should like to record the only case of mental disturbance which it has been my fortune to meet with after operation. From Mrs R., æt. 23, a large ovarian cystoma was removed; the other ovary, being healthy, was not interfered

with. On the third day after the operation, and without warning of any kind, she became maniacal, got out of bed in the absence of the nurse, walked round the ward three times, and threatened to commit suicide by jumping out of the window. She was secured, strapped in bed and quietened with hyoscine. In a week's time she was again perfectly rational, the wound was healed by first intention without complication of any kind, and she was none the worse of her premature perambulations on the third day. The temperature never rose above 99° F. What was the cause of the mania in this case? It clearly was not due to sepsis or temperature, and there was apparently no hereditary mental taint.

(*b*) Ventral hernia from giving way of the abdominal cicatrix has not, in my experience, been a common after-complication. In a few cases it cannot be prevented, and I would classify these cases, according to my limited experience, under two heads—(1) as a result of puncturing with the suture needle an artery (possibly some aberrant branch of the deep epigastric in the abdominal wall), and (2) in opening the abdomen during the early months of pregnancy there is a risk of hernia, provided the pregnancy continues, from the subsequent stretching of the recent cicatrix by the growing uterus. In cases of puncture of an artery with the suture needle a blood-cyst forms, which is apt subsequently to break down and thus materially to weaken the abdominal wall. This is an accident fortunately not common, which cannot be foreseen or avoided, and is certainly most apt to occur if through and through sutures be used. In opening the abdomen during the early months of pregnancy a ventral hernia resulted in one case where I removed a dermoid cyst blocking the pelvis of a patient four months pregnant. She went to full time, and was safely delivered of a child above the average size. After the puerperium a small hernia, the size of a florin, was discovered at the lower end of the cicatrix between the recti muscles. In this

case, when the recti muscles were strongly contracted, the hernial opening was obliterated by their inner borders coming into close apposition. This gave a guide to the treatment, which consisted in regulated exercises whereby the recti muscles were developed and strengthened, and the hernia ultimately disappeared. In most cases of hernia, however, operative treatment is necessary on the usual surgical principles. There is no doubt much can be done to prevent subsequent hernia by careful attention to operative details.

1. The method even of opening the abdomen, and also of enlarging the wound is of considerable importance. It is advisable to injure the recti muscles as little as possible, so as not to interfere with their vitality or injure their nerve supply. In my opinion scissors should never be used to prolong the original incision, as scissors always contuse the edge of the wound, and thus contribute to defective union.

2. There is no doubt that the longer the incision the greater is the tendency to subsequent hernia, but there are certain conditions where we are clearly justified in risking a hernia in this way, and I would instance two of these:—(*a*) In removing a papilloma of the ovary it is of the highest importance to remove it in its entirety, in case of the escape of its contents infecting the general peritoneum. We are, therefore, compelled to make a long incision. Peritoneal infection from such a cause is clearly a much greater danger to the patient than a long wound with its greater risk of subsequent hernia. (*b*) The attempt to remove a solid tumour through an incision barely sufficient for it is very apt to produce contusion and bruising of the edges of the wound, a most unfavourable condition for subsequent healing by first intention. It is, therefore, short-sighted policy in such a case not to lengthen the incision to such an extent as to permit easy removal.

3. Method of sewing up the abdominal wound. Without entering into a disquisition on the various methods of sewing

up the abdomen, I should like to refer to a method which I have lately adopted in many cases, and which I have found has given good results. The principle of this method is not to include any of the fibres of the recti muscles in the bite of the sutures. If we consider the effects of the contraction of the recti muscles, we see that, when contracted, they approximate towards the middle line and each other (which can be readily demonstrated in the puerperal abdomen, etc.), thus effectually preventing hernial tendency. If portions of these muscles are included in their continuity in the bite of the sutures in the ordinary methods of sewing up the abdomen, the following disadvantages result:—(1) During any post-operative sickness or straining the muscles are prevented by the presence of the sutures from contracting normally, a source of great pain to the patient at the time, and giving rise to a distinct predisposition to hernia. (2) The muscle tissue in the bite of the sutures has its vitality lowered by interference with its vascular supply, leading to possible degeneration and absorption of muscle fibres. (3) Though the nervous supply enters from the outer edges of the recti, yet the involvement of the peripheral ends of the motor nerves in the sutures must lead to muscular paresis, and, possibly, degeneration. In some cases these results are so marked that the muscular fibres seem to have been almost completely replaced by fibrous tissue, a very frail barrier to a hernia. No doubt such results are more liable to occur if the stitches have been too tightly drawn. In sewing up the wound the method I have followed to avoid the recti muscles is as follows: 1st, continuous peritoneal suture, including also posterior sheaths of recti, or transversalis fascia; 2nd, continuous suture to unite anterior sheaths of recti; 3rd, interrupted sutures of silkworm gut, including skin and superficial fascia. I have had very satisfactory results with this method, with no tendency to hernia, and with greater comfort to the patient all through. For further information as regards this method I would refer

to an interesting paper by Mr Buck, in the *British Medical Journal* of 16th November 1901.

(*c*) Extrusion of intestines through the abdominal wound after the patient has been put back to bed. This accident I have seen occur twice. In the one case, about eighteen years ago, it was after a hysterectomy, when the old clamp method was in vogue, and it occurred ten or twelve days after the operation, as a result of the patient sitting up in bed. The second case happened in my own experience some years ago. The patient, Mrs G., was operated upon by me for double pyosalpinx. On opening the abdomen the adhesions over the brim of the pelvis were so dense, and the bowels so matted with recent and old-standing inflammation, that it was impossible to reach the tubes from above. I therefore opened the posterior fornix, *per vaginam*, and with the left hand in the abdominal cavity, and two fingers of the right hand through the vaginal opening, I scraped away the pus and caseous matter from both affected tubes. The hand in the abdomen was used as a guide and fixed point to prevent the fingers in the pelvis passing up too far, and thus opening into the general peritoneal cavity from below. The abscess cavity and the vagina were plugged with iodoform gauze, and the abdominal wound was closed by an assistant, as my right hand was necessarily septic. Three or four hours afterwards the doctor in charge of the case sent to say that he thought the patient was suffering from hæmorrhage into the abdominal cavity from some adhesions which we had at first tried to break down. As I was unable to go at once owing to another urgent case with which I was occupied, I advised his taking out the lowest stitch of the abdominal wound, and if there was hæmorrhage I would arrange to come at once. The report sent back was that there was no hæmorrhage, which I fully expected, as I failed to see where any could come from. I therefore did not see the patient till the evening, and found her condition satisfactory, and that she was recovering

from the effects of what had manifestly been shock. I did not disturb the dressing that day, but on the following day, on looking at the wound, found, to my horror, a coil of small intestine lying outside the abdomen, and almost all the stitches of the wound removed, the explanation being that on the previous day, so sure was the doctor in charge of the presence of hæmorrhage that he removed one stitch after another, always expecting blood to appear as each stitch was cut! We at once gave the patient some chloroform, sponged the intestines carefully before replacing them, and closed the abdomen with some horsehair, which was the only material available. The patient never experienced a bad symptom after this, made an uninterrupted recovery, and is now in the enjoyment of perfect health.

(*d*) I have seen one case of subacute peritonitis after ovariotomy, which I ascribed to some shreds from the edges of badly prepared gauze swabs being left in the peritoneal cavity, in spite of all I could do to secure their complete removal. This served as a lesson to me to personally see to the preparation of swabs in all cases where I had the least doubt as to the ability or intelligence of the nurse.

(*e*) Since finer silk is now being used for ligatures in the abdomen, we consequently seldom see the extrusion of ligatures through sinuses at varying intervals after operation, as was at one time by no means uncommon. The presence of a persistent sinus in the abdominal wall should always make us suspect the possibility of such an occurrence. Ten years ago I exhibited before this Society a series of phosphatic calculi which I removed *per urethram* from the bladder of a patient who a year previously had undergone abdominal section, and where it had been found necessary to use an unusual number of silk ligatures. The nucleus of the largest calculus was formed of one of these silk ligatures. The patient has had no further trouble of any kind, and she lately reported herself to me in excellent health.

(*f*) I have on two occasions seen keloid development in the abdominal cicatrix. In one case it was, I think, due to want of accurate apposition of the wound, as owing to the exhausted condition of the patient the abdomen had to be closed very rapidly, and sufficient attention could not be given to careful coaptation. In the second case the wound had healed by second intention. The continuous application of ichthyol collodion is, I find, the best treatment.

(*g*) In conclusion, there is but one further point I would refer to in regard to the subsequent progress of pelvi-abdominal operations, and that is the possibility of the occurrence of intestinal obstruction even years after from kinking and strangulation of the bowel by some old-standing adhesion. It behoves us all to remember this possibility in all women who have undergone abdominal section, and to be on our guard to recognise early any suspicious symptoms. I have seen two cases where death resulted, where if the first symptoms had been correctly interpreted earlier interference might have secured a satisfactory result. In one of the cases the patient, ten years after the removal of an ovarian tumour, had a natural confinement. Four years subsequently she began to suffer from dyspeptic symptoms, abdominal pain, and intestinal obstruction. These were treated lightly for about two months, when suddenly urgent symptoms developed, the abdomen was opened, and a foot of gangrenous bowel was found strangulated by an old adhesion in connection with the old ovarian stump. We must never forget that intestinal obstruction may thus result even after the simplest and most uncomplicated abdominal section. Fortunately, however, it is not a common complication.

IX. ON THE TREATMENT OF UTERINE FIBROMYOMATA, WITH A RECORD OF 28 CONSECUTIVE SUCCESSFUL ABDOMINAL HYSTERECTOMIES BY THE SUPRAVAGINAL METHOD.

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THERE is no subject in clinical gynæcology which at the present time lends itself more to discussion than the treatment of uterine fibroids. On the one extreme these growths are looked upon as being so trivial that they call for no treatment unless symptoms are very urgent; then palliative measures may be employed to tide the patient over the menopause, when the growth will cease from troubling. On the other, their presence is considered at all times to be a menace to life, and when recognised, nothing short of their removal, and, if need be, of the uterus as well, is to be recommended. With such extreme opinions as these held by eminent gynæcologists, the sufferer frequently is thrown on the horns of a dilemma should she unfortunately have had sufficient interest in her condition to have acquired dual advice. From personal experience in the course of gynæcological practice, there is no condition upon which I am asked to give independent advice more frequently than this; and further, there is certainly none upon which my opinion is more questioned and sought to be corroborated or otherwise.

That such divergence of views should exist is to be explained, I believe, from two aspects: first, the extreme variability of the clinical course of these tumours; and, second, the rapid recent advances in gynæcological surgery.

As is well known, the clinical features of fibromyomata vary almost entirely with the original site and mode of growth in the uterine wall. The more they tend to grow towards the uterine cavity, the more evident and severe the symptoms

become; thus, a submucous nodule the size of a walnut may imperil the life of a patient, or at least reduce her to a state of absolute invalidism, infinitely more than a subserous tumour the size of a football. Further, from alterations in their capsule, some tumours in any situation may at times cease to grow and become spontaneously inactive, while after the menopause the majority atrophy or become inert, although a small percentage take on increased activity of growth and malignant change.

With these differences in their clinical course, it is evident much latitude is given for the conservative physician to support his principles of hope, trust, and patience; while at the same time the more radical surgeon has a solid foundation for his policy of action.

What has led, however, to this great diversity of opinion more than anything else, has been the enormous advance in surgical methods and technique which have robbed the radical treatment of these uterine growths of its terrors, and rendered possible with ease and safety what twenty years ago was considered, if successfully performed, an operation of almost miraculous character.

It would appear as if at present we were in the transition stage, where the older gynæcological physician has not advanced with the studies of gynæcological surgery, and views the treatment from the standpoint of his early practice and teaching. While on the other, as in all great advances, we have the opposite extreme of excessive zeal begotten of novelty. I have ventured, therefore, to bring this important subject before the Society in the humble form of my own experience with the hope that a valuable expression of opinion may be given from among its members, so that some definite lines of guidance may be laid down which may be of benefit not only to ourselves, but which may help to remove that variance of opinion which must breed, in our patients, discomfort from want of confidence.

The treatment of uterine fibromyomata may be classed into symptomatic and radical. The former embraces the exhibition of drugs, the employment of electricity, and the removal of the uterine appendage, and the latter the operations of myomectomy and hysterectomy.

SYMPTOMATIC TREATMENT:—*Medicinal.*—This practically resolves itself into the exhibition of ergot, which, from its action in stimulating the contraction of unstriped muscle, is of special value in bleeding from the uterus, as it not only causes contraction of the vessels, but also of the uterus itself. By this means growths in its walls are firmly compressed, and their nutrition impeded, while at the same time they are frequently extruded towards the uterine cavity and expelled, or outwards beneath the peritoneum when the symptoms of hæmorrhage are not so urgently manifest. Until comparatively recently, the treatment of uterine fibromyomata was almost entirely confined to the use of this drug. Now, however, this method has been almost entirely superseded by more efficient means, and should only be exercised where symptoms are of a trivial nature, as the prospects of case are distinctly remote, and even then after a very prolonged period of irksome treatment. As I have already said, I intend mainly in this communication to give a resumé of personal experience; this, so far as ergot is concerned, is practically nil, thus I am incompetent to give an opinion of any weight, and shall pass to the next method, namely, *electricity.* I may say, however, I have met with many cases where a prolonged course of treatment by ergot had been tried before I saw the patient.

ELECTRICAL TREATMENT.—In a paper I read before this Society nine years ago, I gave an account of twenty-two cases treated by this method, and in a subsequent communication in 1896, an account of three cases treated by electric negative

puncture. Since that time I have treated a large number on similar lines with very similar results. I have considered it, however, better to confine myself to the record of the early cases described, as sufficient time has elapsed to form an opinion of value as to the ultimate benefits derived from this form of treatment.

Of the twenty cases which I at these times stated to have had their morbid symptoms cured, I have been able to trace fifteen; nine have remained cured, and five of these have reached the climacteric: of the other six, two had return of bleeding, one of these expelled a large polypus, and has remained well since: in the other I performed oöphorectomy a year ago, having previously removed three years before three small polypi which temporarily stopped the hæmorrhage. In two the tumour continued to grow to such a size that only hysterectomy could be recommended; in one this was acquiesced in and successfully performed, the other still refuses operative treatment. The remaining two cases showed evidence of active change in the growth. In one of these I removed the uterus by supra-vaginal hysterectomy five years ago, and she is now in absolute health, though the microscopic appearances of the tumour were undoubtedly myxosarcomatous, as I showed to the Society at the time. The other I saw for the first time again a few weeks ago, when she told me she had been absolutely well since the electricity was discontinued, until some months previous to her visit to me, when pressure symptoms had manifested themselves. On examination, I found the pelvis blocked by a large soft tumour which, I had little doubt, was due to some malignant degenerative change in the pre-existing tumour. I offered to attempt its removal, but so far have been unable to prevail upon her to allow me to do so.

Shortly, then, the result of the electrical treatment on these fifteen cases may be summed up as follows:—nine cured, two

hæmorrhage recurred, two continued to grow, two underwent active degenerative change. A result such as this must, I think, be considered most satisfactory, and fully corroborates what I at that time said of the great value of this form of treatment.

Removal of the appendages, as recommended by the late Lawson Tait, is undoubtedly of great service in the treatment of uterine hæmorrhage, by inducing a premature menopause; and in the treatment of fibromyomata it is of special value through this means by promoting the atrophy of their growths which usually occurs after the climacteric.

It is limited, however, in its application by its impracticability in many instances, and also by the fact that in a percentage of cases it fails to produce the benefit desired. Failure to arrest bleeding has been stated by some operators of large experience to be met with in as large a proportion as 15 per cent. of cases. My personal experience in this operation is represented by nine cases. Seven of these have been entirely satisfactory; in one, the bleeding was stopped but the tumour continued to grow, while in another no benefit whatever occurred from the operation either as regards hæmorrhage or growth, and hysterectomy had subsequently to be had recourse to.

In the soft, œdematous type of fibroid, removal of the appendages seems to be absolutely valueless, and should never be attempted. Before myomectomy and hysterectomy were performed with such safety as they now are, this operation was frequently performed, and justifiably so; but the excellent results now obtained by the more radical operations have restricted its sphere of application, as the uncertainty of its beneficial effects in so large a proportion of cases hardly warrants one in exposing the patient to the risk of opening the abdomen with only the probability of a cure and a 15 per cent. chance of failure.

RADICAL TREATMENT.—This is represented by the operations of myomectomy and hysterectomy, either of which may be undertaken by the vaginal or abdominal route.

Vaginal myomectomy naturally embraces the removal of stalked growths or submucous polypi, which, according to the position of the tumour may be an operation of the utmost simplicity or of considerable difficulty. This depends greatly on whether the fibroid nodule is merely covered by a layer of mucous membrane, which alone forms its attachment to the uterus, and which can be severed by simple torsion, or if, on the other hand, it is encapsuled by a thick layer of muscle derived from the uterine wall, in which case the growth can only be amputated by scissors or the ecraseur. In these latter instances it is not infrequent for a certain amount of uterine inversion to be present, which demands great care in dividing the pedicle to prevent buttonholing the uterus. There is, perhaps, no more satisfactory operation in gynæcology than the removal of subserous polypi, their removal in a large percentage of cases being represented by a "simple turn of the wrist," by which means the patient is from that moment cured from bleeding and pain which may have troubled her for years and reduced her to the most confirmed state of invalidism.

Myomectomy by the vaginal route for sessile subserous tumours was before the period of antiseptics most dangerous and but rarely attempted. Now it may be undertaken with safety, and in suitable cases should be attempted without hesitation. For its efficient performance, a widely dilated cervix is a *sine qua non;* the operation is therefore chiefly applicable to these cases where the cervix has already been dilated by the downward growth of the tumour, or is markedly thinned by its pressure in the cervical canal. Cervical fibroids are also to be removed in this manner. The operation consists in free incision of the muscular capsule with piecemeal enucleation of the growth and subsequent packing with sterilised gauze.

Rigid antisepsis is of the utmost importance. I have on four occasions adopted this method of treatment for the removal of fibromyomata ranging from the size of an orange to a cocoanut with most gratifying results.

Abdominal myomectomy at one time was almost entirely confined to the removal of pedunculated subserous tumours, but now is largely employed for the removal of sessile subserous and interstitial tumours, and even submucous growths. It is indeed a debatable question, how far conservatism in surgery warrants us in proceeding on these lines, but some operators have removed as many as fifteen nodules from the uterus in this way; the surface of the uterus being like a pattern in crewel work after the operation has been completed. If the uterus was indispensable to life or health, such a procedure might be justifiable, but the risks from such a lengthened manipulation and the question of the serviceability of the organ afterwards, make one ponder whether it is not in the best interests of the patient to be rid of such a focus of neoplasms. Before performing myomectomy one must in all cases be careful to ascertain that no other nodules exist in the uterine wall, else the real cause of the patient's symptoms may not be removed. I have on two occasions been tempted to simply remove a prominent tumour from the abdominal aspect, when on more careful examination of the uterus I have found other tumours smaller in size which probably accounted more particularly for the symptoms for which I was operating (*see* specimen).

Hysterectomy, or removal of the uterus, is called for when the tumour or tumours give rise to urgent symptoms and cannot be efficiently treated by the previous methods mentioned. It may be undertaken either by the vaginal or abdominal route according to the bent of the operator. A number of operators favour the vaginal operation for all tumours less than the size of a six months' pregnancy, and base their method of predilection on the low mortality, absence of shock, quicker convalescence,

and the avoidance of an abdominal scar with its accompanying tendency to weaken the abdominal wall. Others prefer the abdominal operation, as by this means they can see as well as feel what they are about, and can more readily manage complications which may arise. To me it appears more a matter of individual selection, and personally I have entirely confined myself to the latter. When the abdominal route is chosen two methods may be employed; entire removal of the orgap (uan-hysterectomy) or amputation through the cervix or lower uterine sequent (supra-vaginal method).

The adoption of one or other of these methods is usually very much one of individual taste, the claims of both being freely supported by eminent operators of large experience. Those who favour the supra-vaginal method support its adoption mainly on the ground of greater rapidity and the absence of weakening of the pelvic floor by the preservation of the cervix with its vaginal attachments; while the disciples of pan-hysterectomy advance its superiority on the principles of peritoneal drainage and the impossibility of secondary cervical cancer.

After a small practical experience of both methods I have confined myself entirely to the supra-vaginal method, if selection be possible. In this choice I am almost entirely guided by the saving of time in its performance, which from my experience of abdominal operations is one of great value.

Panhysterectomy averages fully twenty to thirty minutes longer in its execution than the supra-vaginal method which itself takes from forty to sixty minutes in an uncomplicated case; unless, therefore, there be some compensatory advantage in total removal, there seems no valid reason why it should be adopted. Drainage is in these cases of little or no advantage; personally, I have never used it, and should it be required it can be readily attained, while the chance of secondary malignant

disease of the cervix is too remote to consider. Indeed, from statistics, the half-hour of extra time would in these grounds be better spent in removing the mammæ, which are more liable to malignant disease than the cervix.

My own experience in hysterectomy for fibromyomata only amounts to thirty-two cases, twenty-eight of which I have performed by the supra-vaginal and four by the total extirpation method. Two of the latter I did by selection to gain an experience of the method; in the remaining two I had to adopt the procedure, as the cervix was involved in the growth which in one case was undergoing sarcomatous degeneration.

The operation was undertaken in the thirty-two cases mentioned:—For hæmorrhage, 20; pressure, 7; abdominal prominence, 3; pregnancy, 1; malignancy, 1.

Pathologically they might be tabulated—Multinodular, 20; calcareous, 1; œdematous, 7; cystic, 1; with carcinoma, 1; sarcomatous, 2.

The seven œdematous growths were in each case single and interstitial, and though enlarging the uterine cavity greatly in every instance, were only accompanied by hæmorrhage thrice. Hæmorrhage was the prominent symptom in the multinodular variety. Pressure symptoms were either due to the large size of the tumour or its impaction or growth in the true pelvis. A few of the cases are of special interest, and are worthy of a short description.

1. In this specimen I show complicated by pregnancy at the fourth month, it will be noted that the placental site is placed over the seat of the tumour. This probably accounted for my inability to induce abortion, which I previously attempted, through the contractions of the uterine wall on the placental site being prevented. The patient complained of severe pain and pressure symptoms.

2. The calcareous growth, which weighed 1½ lbs., was removed from an elderly female, æt. 69, on account of painful

pressure symptoms; the uterus was so atrophied that it was with difficulty recognised, being about the thickness of a lead pencil. It was transfixed and divided in the same manner as an ovarian pedicle.

3. The sarcomatous tumour was removed from a patient, æt. 59, who, before her climacteric (which occurred at 50 years of age) suffered from a large abdominal swelling. This decreased in size, and gave no trouble till about four weeks before I saw her, when she complained of severe intra-pelvic pressure symptoms. The history of the case, and the diagnosis of a large soft uterine tumour projecting into and bulging the cervix, led me to believe some malignant change had taken place in a pre-existing fibromyoma: this was corroborated by microscopic examination, and panhysterectomy performed. The history, character of the tumour, and microscopic appearance, which shows large sarcomatous cells and fibro-muscular tissue, is of great interest, as it almost conclusively proves to my mind the much debated question of the sarcomatous degeneration of fibromyomata. On four occasions I have removed, by hysterectomy, fibroids associated with other growths; in two ovarian cysts, in one a broad ligament cyst, and one with œdema carcinoma of the fundus.

As regards operative procedure, I have to a great extent followed the method described by Kelly in supra-vaginal hysterectomy, although I frequently ligature both ovarian and uterine arteries before amputation of the uterus in simple cases where the latter vessels are easily accessible. As far as possible, I attempt to ligature the uterine arteries at the point where they commence to ascend the side of the uterus, transfixing a small portion of uterine wall, and thus embracing it in the ligature. By this means all chance of tying the ureter is minimised. Occasionally, a small branch of the artery may have been given off from the main trunk below the point of ligation, and may occasion slight oozing from the stump; this

however, is easily controlled by the subsequent stitching of the pedicle by interrupted sutures, which I systematically employ. I never pay any special attention to disinfecting the cervical canal, and do not attempt to avoid passing the sutures through it, as recommended by some operators.

In the few cases I have done panhysterectomy, I have always opened the anterior fornix first, and have found no special difficulty in subsequently opening the posterior, except in one case where the tumour was very large and lowly situated. In this instance I amputated the main bulk of the tumour, and removed the cervix subsequently.

The results of the thirty-two cases I have thus treated have with one exception been absolutely satisfactory. In this instance I performed the pan operation for a very large sloughing tumour which was projecting through the widely dilated cervix. The patient died on the third day from septic poisoning, having probably been infected from the gangrenous fibroid. This is the only fatal result I have had in the operative treatment of fibroids by any method.

These might be tabulated as follows:—

Operation.	No.	Recovery.	Fatal.
Removal of Appendages,	9	9	0
Myomectomy,	10	10	0
Hysterectomy—			
(*a*) Panhysterectomy,	4	3	1
(*b*) Supra-vaginal,	28	28	0
Total,	51	50	1

The remaining thirty-one cases of hysterectomy all recovered without an untoward symptom. Indeed, it is to me a most surprising, and at the same time gratifying, coincidence—the singular absence of shock or even discomfort after these operations, even in patients reduced to the extremes of blood-

lessness. Their convalescence is much more rapid than even after a simple ovariotomy, the only discomfort complained of being that which is necessarily connected with the abdominal incision. In extremely anæmic cases I have almost without exception noted a swinging temperature rising as high frequently as 102° F., unaccompanied, however, with any rise in the pulse rate. Should the ovaries appear healthy I do not remove them, as by this means the harassing symptoms of an artificially induced menopause are avoided.

From what has been stated in the foregoing pages it will be evident that the treatment of uterine fibroids offers considerable latitude for diverse opinions, but no support can be given to either of the extreme views held as mentioned in the beginning of this article.

The presence of a fibroid of the uterus, even if it be of considerable size, should it give rise to no symptoms, is no indication for treatment of any kind being adopted. The possible chance of its becoming malignant is so remote that its removal from that aspect is totally unworthy of the slightest consideration, and should it commence at any time to give rise to symptoms, treatment then can be adopted as required. It may thus be broadly said that uterine fibromyomata which give rise to no symptoms or discomfort should be left alone, at least so far as surgical interference is concerned. On the other hand, whenever marked symptoms appear treatment is urgently demanded, as the general tendency is for these to continue and become aggravated unless the climacteric intervenes.

If treatment be thus necessary, one must naturally decide in what manner it is to be undertaken; and from what has previously been stated, the selection of the most suitable and efficient method is by no means a sinecure, depending as it does on so many different conditions.

Thus, in the typical case of a patient, æt. 35, who is more

or less invalided from menorrhagia, the result of an interstitial fibroid the size of an orange, it is extremely difficult to decide on the proper course to pursue. Being a free country, the patient herself may desire to continue in her crippled condition; as one must admit to her that the chances are distinctly against her bleeding to death. At the same time, tinkering treatment such as ergot, resting at the periods, hot douching, and even curetting, may be desired, by which means she manages to pass through years of an existence of semi-invalidism and comparative uselessness, till eventually either the delayed menopause may terminate her suffering after her best years of life are past, or symptoms may become so urgent that more radical methods of treatment are demanded and undertaken in her weakened state. To sanction and aid such a career is, I consider, quite unworthy of our profession, and curative methods ought in all such cases to be recommended, and it is now that the main difficulty arises in proposing the most desirable means.

This practically resolves itself into either electrical treatment or abdominal section.

The former, I know, is almost universally scorned, but I very much question if legitimately so; from experience, as I have shown, it certainly deserves much greater deference than it has shown to it, and is certainly more worth trying than the "tinkering" methods so frequently adopted. Resulting, as it does, in a fair proportion of complete cures, it ought certainly to be advanced as an alternative to the more severe operative methods of treatment, in cases suitable for its adoption, and also where operation is absolutely repudiated by the patient. It seems to me that the main reason for its being almost generally decried is because of failures the result of its adoption in unsuitable cases, such as subserous tumours. Here it tends to aggravate hæmorrhage by stimulating uterine contractions, which thus drive the growth more into the

uterine cavity in their attempt to expel it. When used for interstitial tumours of medium size, it seldom fails to prove beneficial, and for these its use should be mainly adopted. Further, should it fail in its action, no harm is done (as is so often stated), and subsequent operation is not in any way complicated, as I have proved from experience. I should like here to impress the great importance of making an absolute diagnosis of the variety of tumour we have to treat in uterine hæmorrhage. This in many cases can only be acquired by thorough dilatation of the cervix and digital examination of the uterine cavity. By this means many a uterus may be saved by the recognition of a stalked growth which can easily be removed, and the patient saved from undergoing a more dangerous operation.

Should operative measures, however, be consented to, the alternative procedure of removal of the appendages or of the tumour by myomectomy or hysterectomy have now to be discussed, the former with a possibility of a 15 per cent. failure and a minimum of risk, or the latter an absolute cure with a questionable 6 per cent. mortality? The decision must eventually rest with the patient; but personally I have no hesitation in advising the more radical method. In all cases the consent of the patient should be got to perform the major operation should the minor be attempted and found impracticable. There is, so far as I know, nothing in gynæcology to equal the satisfactory results obtained after the removal of fibromyomata, the patient being restored to absolute health after, in most cases, many years of inactivity and invalidism. In whatsoever manner it is done by competent hands, the risk is now so comparatively small that it seems well worth naming, as an absolute cure can be guaranteed in almost every instance.

In conclusion, I should like to say that though I have brought this important subject forward mainly in the light

of personal experience, and thereon have advanced my individual opinion, I have done so in the hope that an expression of opinion on this much debated and exceedingly important subject may be given by the Fellows of the Society, many of whom, from their large experience, are more competent to deal with it than I am.

The President was sure that the Society was prepared to congratulate Dr Haultain on the success that had attended his treatment of uterine fibromyomata. He did not know that any other operator had had such success as Dr Haultain.

Sir Halliday Croom said that Dr Ferguson had given them a paper of extreme interest, but it had covered such a vast field that it was impossible to undertake the discussion of it that evening. With regard to Dr Haultain's paper, he would like to say that he (Dr Haultain) had brought immense credit to this school by the record of that large number of successful hysterectomies. He had also focussed the opinion of most men on the subject very clearly. He had also, in the first place, made out definitely what tumours ought to be touched and what ought to be let alone. He was surprised and pleased to find that he took such a sensible view, for with such very marked success in operative treatment, one might have fancied that all his weight would have been toward operation. With Dr Haultain he absolutely agreed. As to ergot, Dr Haultain had emphasised the fact that it was perfectly valueless. As to electricity, he and Dr Haultain had been at variance for many years on this subject. But he had now learnt better, for he had met with five women who had been completely cured under electrical treatment alone, though, of course, he could not say that it was due to the electrical treatment. As to hæmorrhage, Dr Haultain had clearly shown that it was the interstitial variety of tumour that was benefited from the treatment, and that the other forms did not benefit at all from it. And this ought to

be kept in view in the carrying out of electrical treatment. As to what had been said as to the treatment of polypi, they were all now agreed on that subject. As to hysterectomy or myomectomy, it was entirely a question of selection. Each man would do as he fancied. In most cases it was a pure fancy. As to the removal of the ovaries, he should like to say that it was a very satisfactory operation, and except in the one case shown that evening, and the one Lawson Tait mentions in his book, he had seen most of the cases in which the operation had been performed, cured, provided always that the tumour was not larger than a four months' pregnancy. As to the case recorded by Tait, in which he had removed the ovaries and tubes in Edinburgh, and which had died of hæmorrhage a little while after, and in which Tait had said the diagnosis was wrong and that the patient had cancer, he could but say that the case had been a picked one, and both he and the others who had seen the case did not consider it was a case of cancer. He thought he could say that never had two better papers been presented to the Society, and he congratulated the authors.

Dr Berry Hart said that Dr Haultain had given them an exceedingly well-balanced opinion of the present treatment of fibromyomata. Those of them who had been taught before the great recent advances had been made had been taught to leave these cases alone, and he had had difficulty in throwing off that teaching, though he had no doubt that the present method of treatment was better, and he practically took up Dr Haultain's position as to the treatment of fibromyomata. As to the methods of operative treatment, the supra-vaginal method was probably the best on the whole, though he had seen, and performed, panhysterectomy with excellent results, and the latter method had the advantage of giving drainage. He would be inclined to consider as an indication for the supra-vaginal method any ordinary case. But if the tumour was developing in the cervix or broad ligament, he thought it better to do

panhysterectomy, for if there was any oozing in the bed of the tumour one could drain into the vagina. He agreed so thoroughly with the judicious way in which Dr Haultain had put the matter, that he would not say any more on the subject except to congratulate the author. As to Dr Ferguson's paper, with regard to the suturing of the wound, and especially the method he mentioned of not including the muscle in the suture, he himself had always considered it good to include the muscle, for a muscular wound was apt to be good and permanent. Curiously enough, Spenser Wells used to bring peritoneum and skin to peritoneum and skin, missing the muscle altogether, and he had seemed to have a good many hernia cases following operation. He agreed with Sir Halliday Croom in saying that they had had two exceedingly interesting papers. He was sorry Professor Simpson was absent, for they would like to have heard his opinion on the subject, for he had had a good deal of experience of panhysterectomy.

Dr Lamond Lackie said he agreed with Dr Haultain that ergot had little or no effect upon a uterus which was not pregnant or had been recently pregnant. In a few cases chloride of calcium and stypticine seemed to somewhat control hæmorrhage. Electricity, undoubtedly, caused contraction of the uterus, and in a case in which he had used this method a submucous sessile fibroid became a polypus and was easily removed. After removal of the ovaries for a fibroid it was often some months before hæmorrhage ceased, and in some cases the operation had no effect at all. As to hysterectomy he had practised only the subperitoneal method, leaving the cervix, and the results had been good.

Dr Haultain said the greatest difficulty he had had in knowing when he had opened into the peritoneal cavity was in a case where an ovarian cyst had ruptured into the peritoneum. He thought he had got an adherent cyst, and that he had opened into the cyst, and therefore started to dissect the cyst

wall off, and went on for a considerable time, finding eventually that he had been dissecting off the peritoneum from the abdominal wall. As to hæmorrhage on the fourth day, he had also had a case of extra-uterine pregnancy where the patient nearly died on the night of the operation, in which case he had had to plug the vagina for bleeding, which was from aborting decidua, and which might be termed another variety of post-partum hæmorrhage. As to the malignant degeneration of a fibroid, he had never had a case before; but from the history of the case shown to-night and from the microscopic appearance in which the diseased and degenerating fibres could be seen and the sarcomatous cells, he certainly must say he was inclined to think that he might try to prove to Dr Haig Ferguson that such a case did occur. As to the question of hernia and the sewing up of the abdominal wound, he himself had never varied in sewing the wound through and through from peritoneum to skin, embracing everything. It might be that some cases of hernia had followed and gone elsewhere to be treated, but so far as his own knowledge was concerned, he had never seen a case of hernia resulting, and until he did see cases he should never give up the through and through method of suturing the abdominal wound for any other mode. It was so rapid, and that was a most important feature in abdominal surgery, whereas to sew up in layers took four or five times as long as sewing through and through. As to trouble resulting from the puncture of vessels, it was the exception not to puncture vessels in stitching up the wound, but in drawing the stitch a little tighter the bleeding at once stopped, and there had been no further hæmorrhage.

MEETING V.—MARCH 11, 1903.

Dr JAMES RITCHIE, *President, in the Chair.*

I. *Dr Haultain* showed (1) OVARIAN TUMOUR WITH A TWISTED PEDICLE, complicated with a four months' pregnancy. The Fallopian tube was very large from hypertrophy and congestion. (2) AN INTRA-LIGAMENTARY FIBROID which had almost entirely lost its natural connection with the uterus, but was so very intimately adherent to it by adhesions that hysterectomy was necessary. (3) FIBROID showing obliteration of the free cervix, in which panhysterectomy therefore became necessary. The symptoms had been present for a long time, and the patient was very exsanguine. There was no radial pulse for five hours after the operation, and when the catheter was passed in twelve hours there was no urine, which gave rise to apprehension lest the ureters had been tied in, but the urinary function was resumed next day—the non-excretion of urine having evidently been due to the non-secretion of it owing to the pulseless condition of the patient.

II. *Dr Angus Macdonald* showed (1) AN ENLARGED THYROID GLAND from a premature child of eight months, causing obstruction to the breathing from compression. The child died after an unsuccessful attempt at tracheotomy. (2) TWO LARGE TUBES —evidently hydrosalpinx—removed six weeks ago by abdominal section.

III. *Dr Jessie Macgregor* showed AN ŒDEMATOUS SEVEN MONTHS' FŒTUS. There had been smart hæmorrhage after the birth of the child, and handfuls of degenerated placenta (like hydatid mole) were then passed. Then after some time the placenta itself was discharged—apparently healthy. The organs had been examined microscopically, and heart was found normal,

but the liver and thyroid were much infiltrated with a round cell infiltration.

Dr Ballantyne suggested it might be a leukæmic condition.

IV. *Dr Fordyce* showed TWO SETS OF APPENDAGES—removed on the same day, both patients having sought advice for severe abdominal pain—(*a*) from a patient, æt. 20, who had had three attacks of supposed appendicitis, but it was really an ovarian tumour with a pedicle which had twisted very slowly. There had been smart hæmorrhage after separation of very dense adhesions, and he had drained through the abdominal wound for twenty-four hours; the other ovary was extensively diseased also. (*b*) From a very stout woman who had also complained of severe abdominal pain, but from whom the tumour which had no twist had been removed quite easily. The second ovary was also diseased—a cyst growing from the top of it.

V. *Dr Ballantyne* showed (1) MALFORMED FŒTUS (the three hundredth specimen that had been sent to him for examination) showing (*a*) complete absence of the cranial vault with exposure of the brain; (*b*) hare lip with facial cleft extending to the right eye; (*c*) exomphalos of most of the abdominal contents; (*d*) ectopia cordis; (*e*) hypospadias; (*f*) very malformed right hand; (*g*) signs of adhesions of amniotic membranes all round, and probably the mesentery ran round the neck of the child. The case had been a footling presentation in a primipara. (2) A LARGE COLLECTION from the inside of a Fallopian tube removed from a woman aged 73.

VI. *Dr Haig Ferguson* showed (1) UTERUS removed by vaginal hysterectomy for cancer of the cervix. The patient is only 32 years of age. She has had six children and four miscarriages. Her eldest child is 13, and her youngest 4 years old. Symptoms of her present illness had existed for six

months before admission to hospital. Her family history is somewhat remarkable:—Her father died of cancer of the stomach, æt. 62; her paternal grandfather also died of cancer of the stomach; her eldest brother died of cancer of the stomach, æt. 23; and her youngest sister died of cancer of the rectum, æt. 19. On removal of the gauze plug from the vagina forty-eight hours after operation, a piece of omentum was found to be attached to it. This was carefully separated and pushed back, and no untoward symptoms of any kind resulted. The patient is asthmatic, and is consequently unable to lie very flat in bed, which possibly accounted for the omentum thus prolapsing, though, as a precaution, the bed was tilted from the foot from the very first. The vaginal roof is now firmly cicatrised, and she has already begun to gain flesh, barely three weeks since the operation. This is the first case in which Dr Ferguson has seen the omentum come down in this way after vaginal hysterectomy, and he would be glad to hear if any other Fellow has had a similar experience. (2) A SEQUESTRATED FIBROID which is practically completely calcified. Its connection with the uterus had been completely severed, and it was attached to the appendix vermiformis by an adhesion. (3) FIBROID TUMOUR removed by abdominal hysterectomy two years after removal of the ovaries. It will be seen that a remarkable submucous development had occurred in this case, with thinning of the uterine wall.

VII. NOTES ON FIVE CASES OF ABDOMINAL SECTION FOR EMERGENCIES DURING PREGNANCY.

By ALBERT E. MORISON, M.B., F.R.C.S.E., Hon. Surgeon, Hartlepool Hospital.

The following cases are of interest, because, in all, the progress of pregnancy or parturition was complicated by conditions demanding immediate action.

PORRO-TAIT'S OPERATION.

CASE I.—20*th March* 1897.—M. P., æt. 24, 4 feet 2 inches in height, spare woman, with no apparent deformity of any of her bones, but with a history of rickets in childhood. She was three years old before she could walk, and at the age of 14 (ten years ago) came under my care suffering from disease of the left hip-joint, which confined her to bed for six months. This, however, had left no deformity of the limb.

Dr Moffat Young first saw her at 4 P.M. on 20th March. Labour had begun at 9 A.M. the same day; the "waters" broke at 3 P.M., but the pains were not severe. As the presenting head made no progress, he made a careful examination, and found that the lateral diameters of the pelvis were so much diminished that he concluded operative interference would be necessary. I met him at 9 P.M. The patient had then been twelve hours in labour, and was exhausted. The uterus was firmly contracted, but the pains were feeble. Vaginal examination showed the sacro-sub-pubic conjugate to be apparently normal, but the transverse diameter of the pelvis was so much contracted as to admit only two fingers. The head could be felt high above the pelvis brim. It was obvious that the child could not be delivered *per vias naturales*, and the following operation was performed:—

The patient was chloroformed in bed, and when under the anæsthetic was lifted on to the table. Her abdomen was cleansed with soft soap, turpentine, and ether, and purified with 1 in 500 corrosive sublimate lotion. An incision was made in the middle line from the umbilicus to about 1 inch above the pubes, and the peritoneal cavity was opened. The wound, being too small to allow of extrusion of the uterus, was enlarged upwards with scissors. The uterus was then tilted out of the abdomen, and a large sponge was packed

behind it over the intestines, which were consequently not further exposed during the operation.

A piece of drainage tube was passed round the uterus, above the cervix, and tightened to form an elastic ligature, care being taken to avoid the bladder. The uterus was then opened close to the fundus by a median longitudinal incision, the fœtus was extracted, the cord clamped with two pairs of forceps and divided, and the child was handed to a nurse. The uterus was next cut away above the elastic ligature, traction being exerted on the tubing whilst this step was proceeding. The ligature was finally tied in a double knot, and was transfixed with Tait's pedicle pin immediately below the ligatured stump. The exposed mucous membrane of the cervix was swabbed with pure carbolic acid, and dusted with iodoform and boracic acid.

Douglas's pouch was sponged out, and the parietal incision was closed with silk sutures, except where the stump of the uterus was fixed in its lower angle. The wound was dressed with cyanide gauze and wood-wool.

The operation occupied less than twenty-five minutes, and the patient did not lose more than half-an-ounce of blood, and when put back to bed looked well.

The subsequent history of the case was as follows:—Vomiting was troublesome for twenty-four hours. The patient's temperature attained its highest point, 99° F., on the first evening after the operation. The stitches were removed on the eighth day. The pedicle separated on the tenth day. The patient was allowed to get up on the twenty-first day. The child was healthy when born; it was not breasted, and is now alive and well.

The uterus, with the ovaries and Fallopian tubes, was removed. Four years after the operation the abdominal scar was healthy, and the patient suffered no inconvenience from it.

PORRO-TAIT'S OPERATION FOR SARCOMA OF THE PREGNANT UTERUS.

CASE II.—Mrs N., æt. 37, seen with Dr Cowie of Hartlepool, on 28th July 1899, complained of intense pain down the back of her left hip and leg.

History.—She had two children, the elder being eleven years old, and the younger two years and three months. I had attended her in both confinements, and delivered with forceps.

She last menstruated on 20th October 1898, and believed herself to be nearly nine months pregnant. About three months ago she began to suffer with paroxysms of pain in the left hip, which kept her awake at night, and had gradually become more intense and more constant, latterly preventing her from lying down in bed. On 28th July she presented the appearance of a woman who had suffered from prolonged pain, and she had lost over two stones in weight. The pain had been relieved by nothing but large doses of morphia.

On inspection of the abdomen, beyond a normal nine months' pregnancy nothing was discoverable. On palpation, however, the uterus, instead of being uniformly regular on its surface, had a number of hard, nodular masses studded over it. Two especially were large and prominent; one, about the size of a football, reaching up under the ribs into the left hypochondrium; the second, flat and movable, lying immediately above the pubes.

On Vaginal Examination.—The examining finger, on entering the ostium vaginæ, came upon two thickened cord-like bands, running into the posterior fornix, along the posterior vaginal wall, like enlarged lymphatic vessels. The cervix was high up behind the pubes, and from both fornices nodules could be felt projecting from the uterine wall.

The patient was suffering such intense pain, and the con-

dition of the uterus was such that normal delivery seemed most improbable, so she was sent into the Hartlepool Hospital for operation on 29th July.

30th July.—The operation was performed at 11 A.M., there being no sign of the onset of labour. An incision, reaching from about 1 inch above the pubes to about 3 inches above the umbilicus, was made through the abdominal wall. The uterus was lifted out of the abdomen, and sponges were packed in to cover the intestines. The uterus was studded all over with growths, and the parietal peritoneum also was sprinkled with smaller deposits.

An elastic ligature was fixed round the uterus as low down as possible, tied once, and the two ends were drawn upon to tighten the knot. The uterus was next incised high up in the middle line, close to the fundus, and the child was extracted. The placenta was on the posterior uterine wall, and consequently out of the way.

The uterus was then amputated above the elastic ligature, the latter tightened, and a pedicle pin inserted through the stump. The parietal incisiod was closed with silk sutures, and the usual dressings of cyanide gauze and wood-wool were applied.

The operation occupied thirty-five minutes; the patient soon rallied from its effects, and was ordered nutrient enemata of beef-tea (℥iv.) and brandy (℥p.) every three hours.

At 6 P.M.—Half a grain of morphia suppository was given. Temp. 100·8°; pulse 94.

31st, 2 A.M.—Temp. 101·6°; pulse 84. Patient in great pain. Suppository of morphia (gr. ½).

10 A.M.—Slept a good deal during night. Been sick a little. Temp. 102°; pulse 92. 5 min. inject. morph. hypod.

10 P.M.—Patient had a comfortable day, not much pain, no sickness; has had tea and water. arrowroot. Temp. 101·6°; pulse 86.

From this date the patient's recovery was uninterrupted so far as the operation was concerned, and the pedicle came away on the fifteenth day. She was, however, losing flesh and strength, and though no fresh growth could be detected, the malignant disease was manifestly progressing. The pain in the thigh, which had caused her so much distress, disappeared after the operation. She was discharged from hospital on 10th October, gradually became weaker, and died on 23rd November, 1899, 117 days after the operation. The macroscopic appearance of the uterus suggested that the growth, which was evidently malignant, might have been previously fibroid. Microscopic examination of a portion of the growth showed it to be a large round-celled sarcoma.

The child is alive at the time of writing, healthy and strong.

Porro-Tait's Operation for Contracted Pelvis.

Case III.—Mrs A. L., aged 22, was seen on 1st October, in consultation with Drs McCullagh and Strover.

The history, obtained from her on a subsequent visit, was that she had always been very delicate, and, as far as she and her sister knew, was 2½ years old before she began to walk. Menstruation was always regular every twenty-one days from the age of 13 till 25th December 1901, since when she had seen nothing.

The patient was very thin, small, and slightly-built; height, 4 feet 6½ inches.

Pains began on 28th September at 11.40 P.M., and continued regularly throughout the night. The "colors" began when the pains commenced. She sent for the doctor on the morning of the 29th. The pains continued throughout the day and the day following, but the "waters" did not break till 3 A.M. on 1st October. At that time Drs McCullagh and Strover agreed that the child could not be born *per vias naturales*, and sent for me.

I saw her at 4 A.M. She was then under chloroform. On examination, *per vaginam*, my finger came upon the sacral promontory, extending far forward. In front of this could be felt the partially dilated os uteri, and the two examining fingers could, with difficulty, pass between the pubic arch and the sacrum. The pubic arch appeared to be depressed inwards laterally, so that a V-shaped space was created. The umbilical cord protruded through the os, and was pulsating. The fœtal head could be distinguished high up in the right iliac fossa.

As soon as arrangements could be made, and the necessary instruments obtained, the following operation was performed:—The abdomen was cleansed as in the previous cases. An incision was made from about 2 inches above the umbilicus to within 1 inch of the pubes. The abdominal wall was so thin that the peritoneal cavity was opened at once. The uterus was next drawn out of the abdomen, flat sponges were packed behind it over the intestines, and an elastic ligature of drainage tubing was passed round the uterus as low down as possible and tied once. Dr Strover took charge of this for the purpose of making traction on the ends. The uterus was then incised high up in the middle line in front. The placenta, inserted anteriorly, had to be torn through before the fœtus could be reached and extracted. During this time traction on the elastic ligature prevented any hæmorrhage. The cord was clamped in two places and the child set free. The uterus was cut away above the ligature, the raw surface purified, and a pedicle pin was inserted through the stump. The upper part of the left broad ligament, with the ovarian artery, slipped from the bite of the elastic ligature, and was tied separately with silk. Douglas's pouch was then mopped dry, the parietal incision was closed with silk sutures. The usual antiseptic dressings of sublimate gauze and wood-wool were applied. The operation occupied thirty-five minutes from the commencement of

washing the abdomen until the patient was put back into bed. Her pulse was good and strong, and she showed no signs of shock, although she had been under chloroform four and a half hours, when she regained consciousness. She was slightly sick during the day, but retained an egg beaten up in a cup of tea. The catheter was passed every six hours, and the vagina was douched with $\frac{1}{2000}$ corrosive lotion, and a wood-wool diaper applied to the vulva.

2nd October.—Had a restless night, dosed but did not sleep; temp. 98·8°; pulse 86. Passed urine twice, flatus freely. Not been sick. Had an egg beaten up in tea. Ordered water arrowroot, beef-tea, and egg and tea. Calomel, grs. v. 9 P.M., temp. 97·0°; pulse 102. Bowels well moved.

3rd October.—Temp. 98·4°; pulse 84. Slept all night, and feeling well and comfortable. To have soda water and milk. 8 P.M., temp. 98·0°; pulse 84. Had a good day.

4th October.—Temp. 99·2°; pulse 87. Had a good night, but complained of pain in the breasts, which were tender and distended. Ordered m[illegible]. sulph. ℥i, and lin. Belladonnæ for breasts.

Recovery after this date was uninterrupted. The wound was dressed for the first time on 10th October (ten days after), and found to be healed. The pedicle had not yet separated.

21st October.—Dressed. The pedicle was separated, leaving a small granulating surface about the size of a sixpenny piece. Subsequently I obtained the following measurements of the patient:—

Height—4 feet 6½ inches.

Pelvis—Inter-spinal diameter, 9 inches.

Inter-cristal diameter, 10 inches.

Sacro-sub-pubic diameter, about 1½ inches.

Transverse diameter of pelvic inlet admits two fingers.

The child is alive and well. The ovaries were not removed.

On 4th February (four months after the operation) examination of the scar shows no signs of hernia.

CÆSAREAN SECTION FOR ECLAMPSIA AT SIXTH MONTH OF PREGNANCY.

CASE IV.—Mrs M. B., æt. 23. First seen 23rd March 1902. Complained of constant and severe headache.

History.—Menstruation ceased on 25th September 1901, and since then she had seen nothing. Since she became pregnant she had felt better than at any other period of her life. There had been no morning sickness. In the middle of February of this year (five weeks ago) she slipped on the ice, and fell heavily on her abdomen. Since then she had not felt right. About a week previous she felt tired and weary, and had constant headache. Three days ago her mother noticed her face slightly swollen. She had all along passed plenty of water. The patient was pale and her eyelids were swollen, and pitted slightly on pressure. She stated that she was about six and a half months pregnant, and the size of the uterus corresponded with her belief. She complained of intense headache and constant sickness. There was very slight œdema of the feet. She had passed no urine since the previous night at 10 P.M. Urine, sp. gr. 1020, half albumen. The bowels had acted freely.

25th March, 4 P.M.—Patient commenced fits of an epileptiform nature, which recurred about every half-hour.

5 P.M.—Transfused into median-basilic vein 2 pts. of normal saline solution, 15 grs. chloral, and 30 grs. pot. brom., to be administered every two hours, and a blanket bath.

10 P.M.—Quite unconscious. No sooner had she recovered from one fit than she passed into another. No urine obtained on passing a catheter.

As soon as arrangements could be made and instruments prepared, the following operation was performed. I must

here acknowledge my indebtedness for most able assistance to Dr M. Young and Dr Fred. H. Morison. The patient being unconscious, very little chloroform was required. After being lifted on to the table she was prepared as in the previous cases. An incision about 6 inches in length was made, extending above the umbilicus to about 1 inch above the pubes. After opening the peritoneum, the uterus was drawn out of the abdomen and packed round with sponges. It was then incised in the middle line, close to the fundus, for about 4 inches, and the fœtus was extracted by its pelvis, which first presented. The placenta, which was attached to the postero-lateral wall, over the inner opening of the left Fallopian tube, was separated and removed, and the uterus squeezed between my hands to cause it to contract. Four deep silk sutures. extending down to, but not including, the mucosa, were now inserted through the wall of the uterus, and the uterine incision was more thoroughly closed by fine silk sutures through the peritoneal covering only. The abdominal incision was closed by silkworm gut sutures through the entire thickness of the parietes. Before tying the last stitch, about two pints of saline solution at 110° F. were poured into the peritoneal cavity. The usual dressings were applied.

The patient's pulse improved during the operation, which occupied in all 40 minutes. The child had evidently been dead some time.

After progress, 26th, 9 A.M.—Temp. 97·6°; pulse 90; respiration 22. Patient had a quiet night, though still unconscious. Had one pint of saline by rectal injection at 3 A.M. and 8 A.M.; had taken a little soda water occasionally; no sickness; catheter passed urine 8 ounces. The skin was dry, and no sweating had taken place.

4 P.M.—Still unconscious. No fits; catheter passed 10 ounces; ordered calomel 1 gr. every two hours up to 6 grs.; rectal saline injection as before every six hours.

10 P.M.—Temp. 98°; pulse 88; respiration 20. Conscious enough to answer "yes" and "no" to questions, but recognised no one; catheter passed 2 ounces urine.

27*th March.*—Temp. 97·6°; pulse 84. Good night; asked me when I went in what I was doing there; remembered nothing; urine per catheter 15 ounces; ordered soda and milk and weak tea.

10 P.M.—Temp. 98°; pulse 88. Bowels freely moved three times, and urine passed at same time; felt very comfortable, and wanted to be up; nourishment freely taken.

28*th March.*—Temp. 98°; pulse 84. Good night; passed urine about 15 ounces, which contained about one-sixth albumen.

9 P.M.—Temp. 99°; pulse 84. Bowels moved once; passed urine three times, about 12 ounces each time; complained of headache; ordered calomel, gr. 1; caffeine, gr. 1; antifebrin, grs. 5.

29*th March.*—Very well; passed urine in abundance.

30*th March.*—Had a good night; headache gone.

31*st March.*—Urine quite free from albumen; sp. gr. 1020.

1*st April.*—Had a slight fit during the night, but did not bite her tongue; dressed; stitches removed; wound healed.

2*nd April.*—Ordered fish; toast; milk pudding.

4*th April.*—Looking much brighter and better; could lie comfortably on either side; appetite good; passed plenty of urine.

Nothing further occurred to interrupt her recovery.

29*th September.*—Reported herself to me; she was three months pregnant, and felt and appeared to be quite well.

The operation scar is sound and healthy.

Rupture of the Pregnant Uterus at the Fourth Month.

Case V.—Mrs W., æt. 36, was seen with Dr M'Gregor, of West Hartlepool, on 23rd September 1901.

Patient had nine children, the youngest one year old. She had one miscarriage between the third and fourth children.

History of present illness.—When three months pregnant, patient went on a railway journey, and after reaching home had severe pains in the abdomen and slight discharge of blood from the vagina. These passed off without treatment. About a month later severe hæmorrhage set in, and she sent for Dr M'Gregor on 14th September. He was from home, but his *locum-tenens* went, and plugged her vagina with iodoform gauze.

As she did not improve a second doctor was asked to see the patient on the 17th in consultation. He introduced a tent, and again plugged the vagina. On the 19th the same doctors dilated the cervix with Hegar's dilators, but nothing was taken from the uterus.

On 21st September patient felt one or two slight pains, followed shortly afterwards by a very severe prolonged pain during which she felt "something give way." The pain ceased, but the oozing, which had never ceased, continued. Previous to this Dr M'Gregor's *locum* had made out that the uterus was in the middle line, and extended up to the level of the umbilicus.

On 22nd September Dr M'Gregor saw her, and asked me to consult with him at 6 A.M. The patient was blanched, had a weak and rapid pulse, and there was considerable oozing from the vagina. Her abdomen was distended, and, on palpation, a hard mass about the size of a cocoa-nut (? uterus) could be felt lying on the right side of the abdomen near the anterior superior iliac spine. In the pelvis, rising above the brim, and especially on the left side, a boggy fluctuation could be elicited, as of blood-clot shut in a limited space. *Per vaginam*, the cervix could with difficulty be felt high up, and posteriorly it moved freely, and was surrounded by this same bogginess. No connection could be made out between the cervix and the

cocoanut-like mass. The oozing blood could be seen to come from the cervical canal. The vagina was firmly plugged with iodoform gauze, two pints of salt solution were injected into the subpectoral region, and the patient was sent in an ambulance waggon as soon as possible to the Hartlepool Hospital.

The following operation was then performed: Chloroform was first administered, and the anæsthesia was continued with ether. An incision was made in the middle line, below the umbilicus, with the patient in the Trendelenburg position. On opening the peritoneal cavity the left broad ligament was found to be greatly distended with blood, which had stripped it off the pelvic wall and pushed the uterus over to the right. The intestines were protected by large sponges. An incision was then made into the left broad ligament, and the hand inserted drew out at once blood-clot, placenta, and a four-months' fœtus. Sponges were immediately packed into the cavity to check hæmorrhage. The incision in the broad ligament was then enlarged, the sponges were carefully removed, and bleeding points were caught up with forceps. It was now possible to make a thorough examination of the pelvis. The uterus was found to be torn across at the junction of the body with the cervix for more than half its breadth, and the peritoneum had been stripped off the parietal and pelvic walls by hæmorrhage. The cavity thus created communicated through the patulous cervix with the vagina.

Taking into consideration (1) the condition of the patient, (2) the ragged, probably septic, tear in the uterus, we decided that a supra-vaginal hysterectomy would be the best treatment. The remaining half of the uterus was cut across, and bleeding points were clamped and ligatured, the cavity of the pelvis was sponged out with $\frac{1}{5000}$ corrosive lotion, the raw area plugged with iodoform gauze, one end of which was passed into the vagina through the cervix, and the broad ligament incision was closed by a continuous catgut suture over the gauze. The

ovaries and tubes were not removed. There was no blood in the peritoneal cavity, and the abdominal incision was closed with silkworm gut sutures. The usual antiseptic dressings were applied, and the patient was put to bed in a somewhat collapsed condition. Strychnine (♏ x.) was administered hypodermically.

Progress.—The patient developed pneumonia, which, we thought, was caused by ether, and was exceedingly ill until 3rd October. The gauze drain was removed from the vagina in forty-eight hours; the abdominal wound caused no trouble. So far as the operation was concerned all went well. Her chest condition, however, caused the greatest anxiety, and my belief is that to the untiring efforts of Dr H. W. M. Strover, the House Surgeon, and the nurses in charge, the patient owes her life. Whenever her breathing became very embarrassed and restlessness extreme, oxygen inhalations were resorted to by them, and with the greatest benefit. Strychnine also was administered regularly every four hours.

After 3rd October, her condition gradually improved, and by the 12th she was almost well.

Since the operation this patient is strong and well.

Remarks.

Objections advanced against the Tait-Porro operation are: (1) The greater danger of sepsis; (2) The longer convalescence; (3) The risk of subsequent hernia of the scar; and (4) That the patient is rendered permanently sterile.

My belief is that no other operation could be found so suitable for the cases, and in the conditions that had to be dealt with in these patients.

In Cases I. and III. the surroundings were so unfavourable that the ordinary requirements of decent life were not available; even hot water was obtained with difficulty.

I may mention as an illustration of our troubles, that in

Case I., all the light obtainable was derived from a small paraffin lamp, which was so defective as to be useless except at close quarters. Dr Young, in the absence of other assistance, was obliged to administer the anæsthetic with one hand and to hold the lamp over the abdomen with the other, whilst the operation was in progress. In these cases, too, the patients had been long in labour, and it is open to question whether in such circumstances the chances of sepsis are increased or diminished by removal of the exhausted and perhaps otherwise damaged uterus. The dangers of sepsis may be minimised by the short time occupied in the operation, and the absence of all complicated intra-abdominal manipulations, and the dangers from sepsis originating in the stump can be obviated by careful suture and antiseptic packing round it, and dry antiseptic dressing of the stump itself. The objection that convalescence is somewhat prolonged carries no weight in such serious circumstances, and the risk of hernia of the scar, though a real one, only deserves similar consideration. Also, it may be said that if hernia of the scar should follow an operation for its radical cure performed before it has attained to large dimensions is safe and successful. Concerning the question of subsequent sterility, I cannot regard the objection to it as other than false sentiment. To the woman herself, the advantages of future sterility are obvious, and this should be the first consideration; to future generations the benefits of additions derived from such a stock are not so clear.

The advantages of the operation are that it can be done quickly with few instruments and with little assistance, and that blood loss and consequently shock are reduced to a minimum.

It was these considerations which decided me in its favour in Case II., an enfeebled woman, which could at the best only obtain short palliation of her extreme suffering by operation.

Case IV. is one of unusual interest. Persistent headache

was the only symptom pointing to renal disease. Urine was abundantly excreted; there were no ocular changes; and œdema was so slight as to escape ordinary observation. It has been my experience that pregnant patients with scanty urinary excretion and œdema of the subcutaneous tissues have not had fits.

Dr Drummond suggests that œdema means low vascular tension, and that high tension may be essential to the production of epileptiform convulsions. In this patient the early period of pregnancy at which the fits commenced is also noteworthy.

The treatment adopted may meet with criticism. So far as I can give my reasons for the operation they are these:—

Immediate delivery, so far as I could judge, after a considerable experience of such cases, was imperative, for the patient without it was likely to die in the course of a few hours. The choice then lay between delivery through the undilated cervix, and small vagina of a primipara, and Cæsarean section.

I acted upon my belief that the least dangerous method was by Cæsarean section, and I feel convinced that the operation has a great future before it in other dangerous and complicated obstetrical cases.

Case V., rupture of the uterus with expulsion of the fœtus and placenta into the broad ligament is, so far as my information and a search through recorded cases guide me, unique. There can be little doubt that the uterus had been torn and stimulated to strong expulsive pains by the introduction of the dilators, and the uterus unable to empty itself through the undilated cervix had ruptured extra-peritoneally, and expelled its contents into the potential space between the layers of the broad ligament, causing a similar hæmatocele to that found in an ectopic gestation, ruptured into the same situation. The fact that, prior to the introduction of the dilators, the uterus was known to be in the middle line and of a size corresponding to

the duration of the pregnancy, helped us to exclude ectopic gestation in this case.

Note on Case IV.—Since this paper was written, this patient has been delivered of a living female child.

Pains began on 27th March at 9 A.M., and continued at regular intervals till 1 P.M., at which time the "waters" broke. The child was born at 3 P.M. The uterus contracted satisfactorily, the placenta was expelled in ten minutes, and there was no hæmorrhage. On palpation the uterus appeared to be non-adherent to the abdominal wall.

The President said that the Society was to be congratulated that one of its Fellows had travelled so far to give the records of such important cases. The paper raised some questions of great importance.

Sir Halliday Croom said they were much indebted to Dr Morison for having come so far to read this paper to them. As to the Porro-Tait operation, he agreed with Dr Morison out and out upon that matter. Under the circumstances, he could not have done better. As to the case of eclampsia, he had three times performed abdominal section for that condition, but he could not give the favourable results Dr Morison had recorded, for all his cases had ultimately died. He would not now discuss the pathology of the disease. In the three cases in which he had operated by opening the abdomen, all had made temporary recoveries; one child had lived, and all seemed to do well for a time. He believed that this operation would be attempted much more frequently than it had been done for the cure of eclampsia. He considered that dilatation of a firm cervix and a small vagina did more harm than good, and that delivery by the abdominal route was therefore safer and better. His first case had been a patient in the country, æt. 45, primipara, with an absolutely firm cervix. She was absolutely uncon-

scious. He had opened the abdomen and delivered a fœtus at term which is still living. The patient regained consciousness the same night, but remembered nothing of what had happened. The second case was in the Maternity Hospital; the patient made an excellent recovery for a time, but died ultimately in a fit. The third case did well for twenty-four hours then ultimately died. He felt perfectly certain that the way to attack eclampsia in a primipara was by the abdomen.

Dr Haultain wished to endorse what Sir Halliday Croom had said in thanking Dr Morison for having come so far to give them the report of such interesting cases. He would like elucidation on one or two points. First, with regard to the operation; when the patient's surroundings were bad the Porro-Tait operation was à good one. He had once performed the operation under very similar circumstances to those described by Dr Morison, and the patient did very well. But if he were to do the operation nowadays in a hospital he was not prepared to say that he should adopt the Porro-Tait procedure. There were now such good methods for intraperitoneal treatment of the stump that with good surroundings he should feel disposed to remove the uterus by some such method rather than by the Porro-Tait method, which was now old-fashioned. As regards the technique, he wished to ask why the uterus was taken outside the abdominal wall before being opened — the Porro-Muller operation; — and also how he managed to get it outside through the incision he had described. As to eclampsia, with such an efficient dilator as Bossi's, which can rapidly dilate the cervix in from ten to thirty minutes, was one warranted in performing Cæsarean section in eclampsia? The whole question was one of emptying the uterus, and if that could be done rapidly by the aid of a Bossi's dilator, why should the patient be exposed to a Cæsarean section? In the eclamptic case the patient had been given fish and several kinds of food the day after a fit! Here

in such cases where there was severe albumunuria and fits, or the tendency to fits, a pure and simple milk diet was given. As to the case of rupture of the uterus, it was an extremely interesting one, and the method of treatment used was the one he would adopt in a similar case. He had had one case of a similar kind where he had adopted the same principle, and the case had done very well. In these cases of rupture of the uterus it seemed to be the treatment to be adopted.

Dr Haig Ferguson said there was no question that they were all of one mind in appreciating very highly Dr Morison's paper, and he congratulated him most heartily on the results obtained. His paper opened up the question of elastic ligature and intra-peritoneal treatment of the stump. In Dr Morison's cases he was quite justified in doing as he did, for even under the most favourable circumstances of removing a uterus by supra-vaginal hysterectomy, it takes a longer time, and in such cases as those reported, every five minutes is a vital five minutes to the patient, and if we can save ten or fifteen minutes in the performance of the operation it makes the turning-point towards the recovery of the patient; and he doubted whether Dr Morison's cases would have recovered had supra-vaginal hysterectomy been performed. He noticed that in Case III. Dr Morison had not removed the ovaries. He did not understand how this had been done, for in his experience the elastic ligature had always been placed low down. As to the case of eclampsia, he quite agreed with what Dr Haultain had said as to Bossi's dilator. In his own small experience of the instrument, he found that a very rigid cervix could be fully dilated in thirty minutes or so, apparently in a quite safe manner; and therefore, even if it were a question of rigid vagina or narrow pelvis, he would prefer Bossi's dilator, which would enable him to get access to the fœtus, when he would if necessary do craniotomy, which would be better under unfavourable circumstances than opening the abdomen. He cited a case in which a

patient at full time of pregnancy had suddenly become collapsed, and the abdomen had been filled with blood, where the diagnosis of intra-peritoneal hæmorrhage having been made, the abdomen was opened (by the light of a candle) and the source of the bleeding was not discovered. The patient was almost moribund at the time of operation, and died a short time afterwards. On section rupture of the spleen was found, although there was no history of injury or accident, and the organ was not diseased and in its natural position. It was an interesting case in this connection, for one must remember that an intra-peritoneal hæmorrhage during pregnancy need not have anything to do with the parturient condition.

Dr Fordyce thought the only case open to criticism was Case IV., for if Cæsarean section was to be considered as the method of treatment in eclampsia, he thought more patients would die than even did at the present day. Such a line of treatment could only be carried out by one skilled in opening the abdomen. He wished to ask whether during the operation of Cæsarean section there had been much hæmorrhage, for if so he thought that perhaps in that way part of the success of the operation might be explained. He noticed that in this case the fœtus had been dead some time, which was curious, for often when the fœtus died the albuminuria ceased.

Dr Ballantyne did not think there was any possible chance of their coming to an agreement on the subject of eclampsia. At the same time he thought it quite justifiable at the present time that men knowing how to open the abdomen should try that method of treatment for eclampsia at the sixth month. He must, however, say that he would prefer to use Bossi's dilator. He had now used it in four cases—three of eclampsia and one of most extraordinary rigidity of the cervix, and these cases gave one confidence in the instrument if carefully used. From the cases he had learnt that when with a turn of the handle any rigidity was felt, he then counted up to ten or fifteen, and

by that time the rigidity had disappeared, and one could again turn the handle. One or two cases had been reported as having had few tears from the use of the dilator, but these were probably because the instrument was not pushed far enough in, and dilatation had been commenced short of the internal os. He had met with several cases where the child had died *in utero*, and yet the eclampsia had persisted, so that the fœtal theory of intoxication did not hold in all cases, and probably eclampsia was due to different types from a pathological point of view. With regard to Case V., he had seen a case somewhat similar, where tremendous hæmorrhage had followed dilatation of the cervix in a patient five months advanced in pregnancy, and the patient had died, and in which he now thought a laparatomy might have saved the patient.

Dr Lackie asked a question as to the technique of the operation, whether Dr Morison had experienced any difficulty in putting on the elastic ligature without including the bladder. In several cases in which he had assisted there had been considerable difficulty in avoiding the inclusion of the bladder.

Dr Oliphant Nicholson referred to the case of eclampsia, and did not consider it could often be necessary to empty the uterus hurriedly in such a case as Dr Morison had reported, where the child was dead. Probably it was only where there was a living child that it was important to empty the uterus, and in the case reported, if the fact that the child was dead had been recognised at the beginning, he thought the patient should have been given the chance of recovery without such a serious operation as Cæsarean section. In cases where there was a living infant at six months, then it was quite good treatment to empty the uterus as fast as possible. In other cases he thought there were other means even than Bossi's dilator—morphia, for example, if used in a proper manner.

Dr Morison, in reply, thanked the Fellows for the kind way in which they had received the paper. As to the choice of

Porro-Tait operation *versus* supra-vaginal hysterectomy, the great argument in favour of the former was that it was a much shorter operation; fewer instruments were necessary, there was less risk of hæmorrhage, and altogether it was a much simpler operation in emergency than supra-vaginal hysterectomy. One, of course, realised that the Porro-Tait was not exactly a scientific operation compared with supra-vaginal hysterectomy. But in the cases recorded he could not but feel that the Porro-Tait operation was the one to do. In Case III. it did not matter what was done; the great thing was to relieve the patient of the pain she suffered from, and it was impossible to remove the whole growth, and he had previously made out that the child was alive. As to Cæsarean section in eclampsia, he had long felt that the vaginal operations were not in many cases so free from risk as abdominal section. They were unable to make out whether the child was alive or dead, for the woman was too ill. He had quite made up his mind from previous experience of the difficulty of delivering women in such cases, that Cæsarean section was the operation to be performed. As to the diet given after a fit, the day previous to the fit there had been no albumen in the urine, and the day after the fit there was none, and he had felt justified in placing the patient on fish. As to pulling the uterus out of the wound in the Porro-Tait operation, the reason was that there was much less risk of soiling the peritoneum, and time therefore would not be wasted in sponging out. As to the case of rupture of the uterus, the reason he did supra-vaginal hysterectomy in that case was that he could not be sure the case was aseptic, for she had been treated for some time before he saw her, and there was no option but removal of the uterus. In an ordinary case of a tear of a large pregnant uterus one would be justified in sewing up the wound in certain cases. As to the question of the ovaries having been left, he had had no difficulty in leaving them. He had had no

experience of Bossi's dilator, and he had not one beside him when the case came on; but he did not know that he would have used it in this case even if he had had one. As to the question of hæmorrhage in the case of eclampsia, there was very little indeed, for the placenta was not incised, and as soon as it was removed the uterus was compressed with the hand. Dr Ballantyne was mistaken in speaking of Porro-Tait in the eclamptic case, it was Cæsarean section which was done. He had experienced no difficulty in avoiding the bladder in putting on the elastic ligature. As to the question of Cæsarean section in the eclamptic case when the child was dead, the child had been dead for some time before the fits came on, and therefore it could probably have no association with the cure of the eclampsia. He was perfectly satisfied that the woman could not have lived many hours if something had not been done, and he decided that Cæsarean section was the operation to do. He had always been able to pull out the uterus through the incision he had mentioned.

VIII. THREE CASES OF UNRUPTURED TUBAL GESTATION TREATED BY OPERATION, WITH NOTES OF CASES SIMULATING THIS CONDITION.

By J. A. C. Kynoch, M.B., F.R.C.P. Ed., Professor of Midwifery, St Andrews University.

The most frequent termination of early tubal gestation is death of the ovum, the result of hæmorrhage between the membranes, or between the ovum and tubal wall. When situated in the ampullary portion of the tube and associated with free hæmorrhage, the ovum usually escapes completely from the fimbriated extremity as a "tubal abortion." When the hæmorrhage is less extensive and the ovum situated nearer the isthmus, it may be retained in the tube as a

"mole" or incomplete tubal abortion. That such a termination is far more frequent than actual rupture of the tube is shown by the statistics of Döderlein. Of 45 cases operated upon, or examined by him, 4 terminated in rupture, giving the proportion of 1 to 11. Fehling gives the proportion as 1 to 8. In reporting the three following cases of early interrupted tubal gestation terminating in "moles," my object is to refer briefly to the treatment of such cases, and to compare them with some other conditions which very closely resemble them.

CASE I.—Mrs C. was admitted to hospital, 5th September 1901, complaining of pain in the right iliac region, of five weeks' duration. She had gone one week past the expected menstrual period when the pain began, and it was followed by continuous hæmorrhagic discharge. She gave a history of having passed two large pieces of membrane a few days after the onset of the pain. This was followed by relief of the pain for two days, but it recurred from time to time till her admission to hospital. Under chloroform the uterus was found directed to the front, movable, and slightly enlarged. There was no undue pulsation of the uterine vessels, and both lateral fornices appeared to be free of any swelling. Posteriorly and to the right of the uterus, there was felt a fixed tender swelling about as thick as the forefinger. There being no urgent symptoms, the patient was kept in bed for four weeks, during which period she had intermittent attacks of pelvic pain, with irregular hæmorrhagic discharge from the uterus.

On 5th October, *Cœliotomy.*—The right appendages were found adherent, and the tube distended to the thickness of the thumb. They were removed in the usual way. The left appendages were adherent and the upper part of the broad ligament thickened. She made a satisfactory recovery, and was discharged on 19th November.

On opening the distended tube, a sac was exposed from which there escaped blood-tinged fluid, and on floating the opened tube in water, numerous fine branching villi were observed. Prof. Sutherland examined the tube microscopically, and found well-defined villi, as well as somewhat small decidual cells. No blood in pouch of Douglas.

The patient had been in hospital eighteen months previously with all the signs and symptoms of an ectopic gestation in the opposite side, terminating in the formation of a broad ligament hæmatoma which became absorbed in the course of six weeks.

CASE II.—Mrs C., æt. 31, was admitted to hospital, 19th November, complaining of pain in the right side of the abdomen of five weeks' duration.

Previous history. — Menstruation commenced at 17, of twenty-eight day type, duration seven days. She had had five full-time healthy children; three miscarriages, the last eighteen months ago. She was an inmate of the hospital on two previous occasions for what was regarded as left-sided ovaritis.

Present illness.—The patient stated that five weeks before admission she was seized with severe pain in the right side of the abdomen. She had not menstruated for six weeks previous to the onset of the pain, which continued constant for two days, and then more or less intermittently. Three weeks after the attack of pain she had an abundant red vaginal discharge. There was no clear history of any membrane being passed, the discharge being described as "clotted."

On admission.—A fairly well nourished but anæmic woman; pulse 80, temperature normal. Mammæ parous, right one contained milk. The abdomen soft, no distension, tenderness on deep pressure in the right iliac region. *P. V.*—Uterus slightly enlarged; tenderness in both lateral fornices. To the right

and behind the uterus there was felt what appeared to be an enlarged tube, about the thickness of the thumb. The patient was kept under observation for a fortnight, during which time her chief complaint was the right-sided pain interfering with her sleep. From the history and the physical signs I concluded that the case was one of unruptured tubal gestation, and on the 2nd December I performed cœliotomy. The right appendages were bound down by adhesions, and the enlarged tube, with the corresponding ovary, was removed. The left appendages appeared healthy and were retained. There was no trace of blood in the pouch of Douglas. The patient made a satisfactory recovery. On examining the tube, it was found enlarged at the isthmus. A probe could be passed through the fimbriated extremity. On opening the tubal swelling it was found to be composed of laminated blood-clot, in the centre of which there was a cavity lined with a smooth membrane, containing red-tinged fluid, but no trace of embryo.

CASE III.—Mrs P., 39 years of age, was admitted on 9th April complaining of pain on right side of the abdomen of four days' duration.

Previous history.—Menstruation began at 15, always regular, duration four days. She had five full-time healthy children; no miscarriages. Previous health always good.

Present illness.—Four days before admission, when attending to domestic duties, she felt the pain in the right side, which necessitated her taking to bed. She had three weeks more or less constant hæmorrhagic discharge, the usual menstrual period being one month before this.

On admission.—Beyond the pain complained of in the right side, she showed no special signs of distress. Pulse 80, good quality. Temperature was normal. The abdomen was soft, and the pain was aggravated by deep pressure on the right

iliac region. *P.V.*—Hæmorrhagic discharge from the uterus, which was enlarged, anteverted and movable. To the right and behind it there was an ill-defined tender swelling, corresponding to an enlarged tube.

With the view to a more thorough pelvic examination, she was examined under chloroform. Before giving the anæsthetic, the pulse was 80, good quality, regular, and there were no signs of internal hæmorrhage. When palpating the swelling with the patient under chloroform, I mentioned to the house surgeon that I suddenly felt as if something had given way under the digital pressure of my examination. When she recovered from the anæsthetic she looked collapsed, pale; pulse 120 and weak. She was restless and showed all the signs of internal bleeding. Everything pointing to an internal hæmorrhage, I performed cœliotomy without delay. There was a large amount of blood in the abdomen. The right tube was drawn up, when a rent admitting the point of the little finger was found on the posterior wall of the swelling. From this rent there protruded a large blood-clot. The tube and ovary were removed in the usual way. The left appendages were untouched, and the abdominal cavity was irrigated with a couple of pints of sterilised fluid and $\frac{1}{60}$ grain of strychnia was given hypodermically. The pulse four hours after operation was 104, and except for a troublesome cough she made an excellent recovery from the operation. The tube was enlarged to the size of a pigeon's egg, with the rent on its posterior wall. It was filled with a blood-clot. No embryo was found, but examination of a portion of the sac wall showed chorionic villi. From the well-defined outline of the tubal swelling this appears to have been a case of unruptured tubal gestation, the sudden rupture having been produced during manipulation under chloroform, as shown by the condition of the patient immediately before and after the examination.

As to the treatment of such cases most will agree with Werth in regarding an unruptured tube containing a living embryo as comparable to a malignant swelling, demanding immediate removal and permitting of no conservative treatment. Veit settles the question when he says, "The position of laparotomy is settled, it offers very little danger, and gives a good prognosis." With the death of the embryo, however, we approach more debatable ground. Veit says, "With a dead ovum dangers are absent, and such cases generally recover without help." If, however, we accept the researches of Kühne and others who claim to have demonstrated that the cells of Langhan's layer are capable of penetrating, destroying and causing later rupture of the tubal wall even after the death of the fœtus, then the necessity for operative interference would more frequently arise. In the cases which I have reported, irregular uterine hæmorrhage and pelvic pain pointed to the death of the ovum. For this reason, in two of the cases operation was postponed, but was eventually resorted to, not from supposed actual danger to the patient, but for the relief of the severe, recurrent, abdominal pains. In the third case, immediate operation was imperative, because of signs indicating traumatic rupture of the tube.

The following are notes of three conditions which caused signs and symptoms closely resembling those of early ectopic pregnancy.

1. *Normal pregnancy.*—Simple abortion has been mistaken for ectopic pregnancy. In both, the history and symptoms may be identical, and the diagnosis generally rests on the physical signs discovered on bimanual examination. The absence of any swelling distinct from the uterus (especially laterally) points to the pregnancy being uterine. But even the physical signs may be misleading, as in the following case:—

Mrs H., 34, presented herself at my O.P. department complaining of abdominal pain and vomiting off and on for six days.

She looked ill. She stated that when working in a mill she felt sudden pain, referred chiefly to the right iliac region. On the same evening she noticed hæmorrhagic discharge from the vagina. Pulse 112; temperature 102°. She had had three full-time children, six miscarriages, the last eighteen months previously. Menstruation had always been regular. The last period (described as only a spot) occurred six weeks before admission to hospital.

On examination.—Pain on pressing the lower part of the abdomen. There was fairly copious, dark-coloured hæmorrhage discharged from the vagina. The cervix was soft, uterus enlarged and directed forward. On the right side there was felt a soft round swelling, apparently distinct from, although close to the side, of the uterus. I suspected tubal pregnancy, but fortunately did not operate, as she had a twin abortion corresponding to about two months, the first fœtus being expelled at 11 P.M., the other at 8 A.M. on the following morning. I examined this patient six weeks after the abortion and found the uterus quite normal. Paul Bar reported a case where, in early pregnancy, there appeared to be a soft tumour containing a fœtus and attached to the uterus. Between the two there was a certain amount of mobility, yet the pregnancy proved to be perfectly normal. Bar states that in such cases the ovum has become fixed to the uterine wall close to the orifice of one tubal canal, so that the adjacent part of the uterus grows at first much more rapidly than the remainder.

After the middle of pregnancy the rest of the uterus undergoes softening till the normal condition is attained. In the case I have reported the presence of twins may have favoured the lateral bulging of the uterus felt on examination.

2. *Hæmorrhage into the ovary, Graafian follicle, or an ovarian cyst,* may closely resemble ectopic gestation, as in the following case:—

Mrs T., 39 years of age, was admitted to hospital, complaining of pain in the right iliac region, with hæmorrhagic discharge from the vagina of one week's duration. Eight months previously I had removed a right-sided unilocular ovarian cyst the size of a lemon through the posterior fornix. She menstruated every month after the operation, but missed two periods before the onset of the pain complained of on admission. She had had one child when about 20 years of age. Menstruation had always been regular.

On examination.—Pulse 62; temperature normal. A drop of fluid could be expressed from the right breast. There was some tenderness complained of on pressure over the lower part of the abdomen.

Under chloroform.—Os parous, uterus to the front, not enlarged. Behind and close to the uterus there was felt a round tender swelling about the size of a pigeon's egg. I kept her under observation for a fortnight, during which time she had recurrent pains referred to the left side of the abdomen with slight vaginal discharge which the patient regarded as a return of menstruation. On opening the abdomen, the right tube appeared normal. The left tube was thickened at the uterine end. The corresponding ovary was low down and adherent behind the uterus. Both were removed. Recovery uneventful. On examination the ovary contained a small unilocular cyst, filled with dark blood (tarry in appearance), and the tubal swelling proved on microscopic examination to be a tubercular condition. The interpretation I put on this case, was that with the removal of the cystic ovary eight months previously, and the diseased condition of the remaining one, the two months' amenorrhœa could be accounted for. The sudden onset of pelvic pain would be explained by the hæmorrhage into the cystic left ovary. Severe recurrent pelvic pain may be an outstanding symptom of hæmorrhage into an ovary. Dr Haultain showed before this Society some time ago a

specimen of a hæmatoma of the ovary, removed from a young patient on account of severe pain.

3. *Tubal conditions with cystic ovarian disease* may be associated with menstrual disturbance, and the signs and symptoms may be identical to those of early tubal pregnancy. The previous health of the patient is of importance, as pelvic pain caused by those conditions is most frequently of long standing. The following case of hydrosalpinx with cystic ovary I regarded, previous to operation, as probably a tubal gestation:—

Mrs B., 28 years of age, was admitted to hospital complaining of pain in the right iliac region of six weeks' duration. It had recurred from time to time, varying in duration from a few hours to a whole day. There was no fainting nor signs of collapse associated with the onset of the pain. She had menstruated four weeks before her illness, during which time she had twice fairly copious hæmorrhage from the uterus. She had one child 16 months previously, the labour and puerperium being normal. No miscarriages. Her previous health had always been good.

On examination.—Pulse 94, temperature normal. There was some slight tenderness on pressure, most marked in the right iliac region. *P. V.*—The uterus directed to the front, movable, not enlarged. To the right side of and separated from the uterus there was felt a tender oval swelling. There was nothing made out in the left fornix. On opening the abdomen it was found that the right-sided swelling consisted of a unilocular cystic ovary, adherent to the tube, which was enlarged to the thickness of the little finger and contained serous fluid. The left appendage was not removed. Recovery uneventful. In this case the recurrent nature of the pain, its severity, the associated uterine hæmorrhage and the tumour felt, distinct from the uterus, were the chief features of resemblance to ectopic pregnancy.

Dr Haultain said it was a great pity that Professor Kynoch was not able to be present. The question of extra-uterine gestation was one of the most difficult ones they had to deal with. As far as he could speak from his own small experience —some 12 or 13 cases—they were all more or less different, and there was nothing absolutely typical in the diagnosis of the conditions. Only last week he had operated in a case of extra-uterine gestation where the peritoneal cavity was full of blood, a history of four months amenorrhœa, and the ovum was found the size of a six weeks pregnancy. In this case the uterus was perfectly normal in size. Sometimes the symptoms were absolutely anomalous in different cases. In the cases Dr Kynoch had shown assimulating extra-uterine gestation, any one of them might have been mistaken for that condition. If there was any difficulty about the diagnosis it was safer to operate, for the operation was quite justifiable.

Dr Morison agreed with Dr Haultain as to the difficulty in diagnosing ectopic gestation. He was constantly seeing cases mistaken for ectopic gestation. But with a history of amenorrhœa, a swelling in the pelvis, one was justified in opening the abdomen to prevent a calamity.

Dr Ballantyne said two points had struck him in connection with this paper, to which he had listened with great interest. An American writer had recently written a paper, "Are Ectopic Fœtuses worth saving?" and he gave extraordinary cases of fœtuses developing extra-peritoneally, which were now healthy children, going to school. Some of them had had slight developmental defects which had been put right; and also quite recently Von Winckel had brought out a beautiful atlas of large plates of ectopic fœtuses slightly malformed. Still, the paper by the American and the atlas came rather prominently and suggestively together. At the same time it increased the difficulty, for they would not care to leave a case, diagnosed as extra-uterine gestation, to go through the risk of rupture on the

chance of its going on to full time. The other point he would refer to was as to the unilateral swelling in some pregnancies. This question had been creating a good deal of discussion lately, and it had been adduced as a symptom of uterine pregnancy, to distinguish between subinvolution and pregnant uterus. Extra-uterine gestation was supposed to be worked out as a subject, but now many more questions had arisen in connection with it.

Dr Fordyce was interested in what Dr Ballantyne had said about unilateral swelling in a pregnant uterus, and narrated the case of a lady he had seen some years ago, where what was really a normal pregnant uterus had been mistaken at first for an extra-uterine gestation on account of the position of the swelling.

Dr Lamond Lackie narrated a case of interest in that difficulty of diagnosis had arisen on account of the uterus being anteflexed. There were all the symptoms of an extra-uterine gestation; and on examination, what was at first thought to be the sac was lying in front of the uterus. The sound entered 3 inches. A day or two later the patient aborted. As a matter of fact, it was simply a case of an abnormally anteflexed uterus, and the cervix was enormously elongated.

MEETING VI.—MAY 27, 1903.

DR JAMES RITCHIE, *President, in the Chair.*

I. The following gentlemen were elected Ordinary Fellows of the Society:—William Llewellyn Jones, M.D., F.R.C.S. Ed., Thomas Street, Merthyr-Tydvil; R. W. Gibson, M.D., Orton Tebay; Henry Mules, M.B., Ch.B., L.R.C.P. & S. Ed., Maternity Hospital, Edinburgh; A. H. Rabagliati, M.B., Ch.B., Maternity Hospital, Edinburgh.

II. *Dr J. M. Munro Kerr* showed (*a*) a TUBERCULAR SALPINGITIS, from a case of which he gave the following note:—Mrs C., æt. 24, was admitted to the Western Infirmary under my care on 14th April, complaining of an abdominal swelling which she first noticed six weeks before. She had been married for some years, but had no family. In January of this year she had after a period of amenorrhœa what her doctor considered a miscarriage at the third month. She suffered from no pain or discomfort of any kind. An ovarian tumour was diagnosed. This was confirmed at the time of operation. In addition, however, the left tube and ovary were found diseased and were removed because they presented the appearances of tubercular disease. Dr Teacher gave the following report of the specimen:—"The thickening of the tube is due to tubercular granulations which have completely destroyed all the normal tissues inside the muscular coat. The ovary contains a corpus luteum indistinguishable from that of pregnancy, and shows small tubercles on its exterior."

(*b*) FIBROID OF OVARY, from the following case:—Mrs M. K., aged 38. Patient had four of a family, the last child being born two years ago. Menstruation quite regular. Complained of nothing except falling down of the uterus, which could be dragged with a volsella completely outside the vagina. Ventrofixation and colporrhaphy and primæorrhaphy were performed; and the left ovary, being the seat of a hard swelling, was removed. The tumour of the ovary turned out to be a fibroid. Recovery excellent.

III. *Dr Lamond Lackie* showed a UTERINE FIBROID removed by abdominal hysterectomy (subperitoneal method) from a patient who had suffered severely from pressure symptoms, great pain, and hæmorrhoids recurring frequently even after operation. The after history of the case illustrated one of the benefits of this method of removal. The patient did very well for ten days, then, with slight rise of temperature a distinct

fulness gradually appeared in the left side; this swelling softened and abscess in the pelvis was feared. One night there was a discharge of pus *per vaginam*, the swelling disappeared, and the patient did very well. The peritoneal cavity having been quite shut off, there was no general infection.

IV. *Dr Malcolm Campbell* showed for *Dr Barbour Simpson* a FŒTUS which presented by what might be called the breech. The first stage had lasted two days. There were only two vessels in the cord.

V. NOTE OF A CASE OF FATAL TRACHEAL COMPRESSION BY ENLARGED THYROID IN A NEW-BORN INFANT.

By Dr ANGUS MACDONALD.

THE rarity of thyroid swellings in the fœtus and an interesting question raised by a consideration of the ætiology of some such cases, form my excuse for bringing the following case under your notice to-night. The specimen of the enlarged thyroid I exhibited at our last meeting: it presented two equally enlarged lateral lobes, each about the size of a large marble, united by an isthmus about the thickness of an adult little-finger.

The history of the case is briefly as follows:—

On the afternoon of 24th February I was called to attend Mrs G., æt. 24, in her third confinement. Labour had set in a month earlier than anticipated, and the appearance of the fœtus, a male, was that of a child born at the end of the eighth month, normally developed and nourished, with the exception of the thyroid enlargement. On my arrival I was told that the child had been born about ten minutes, and I found it with the cord uncut, and in an advanced stage of asphyxia, darkly congested, and livid all over, and with no signs of respiratory efforts. Cardiac pulsations could, however, be made out, and as the result of vigorous efforts, following the usual methods, I

was rewarded in the course of about ten minutes by respiration becoming, at least to some degree, established. I might mention that what seemed to act most beneficially in this case was rhythmic traction on the tongue. When I got time to examine the child, I was struck by the unusual thickening of the neck and the inclination of the chin towards the chest, which somewhat limited full extension of the head. The manifest difficulty with which respiration was being carried on, led me to examine the neck more closely. I then made out a distinct swelling in the neck, undoubtedly bilateral, firm in consistence and occupying the usual position of the thyroid gland. With some difficulty I made out that it was limited below, and did not pass behind the sternum. The trachea could with difficulty be felt passing into the upper part of the swelling, but could not be traced downwards. I was forced to a diagnosis of thyroid hypertrophy, although, at that time, I had not previously heard of such a condition occurring congenitally. Considerable improvement took place in the child's colour, but when I left the house an hour and a quarter after the birth, breathing was still being carried on with very great effort, the extraordinary muscles of respiration being called into play, and the lower ribs drawn in with every inspiration. About two and a half hours later I called upon Mr Stiles, who was much interested to hear of the case, and drove at once with me to see it. We found the child's colour much worse than when I left it three hours before, but it was still breathing, although at somewhat long intervals and with great difficulty. Mr Stiles confirmed the diagnosis, and while examining the swelling, drew attention to the variations that seemed to take place in its prominence from time to time. At times it would become much more obvious and easily felt, seeming to fill with blood when the body became darkly congested, and being then more easily felt; and then a little later, when the general colour had improved, it would not be nearly so easily felt nor so prominent. The con-

dition of affairs being explained to the parents—the certainty of speedy death if the condition remained unrelieved, and the faint hope of a tracheotomy operation being survived—they gave their consent to operation. This they did the more readily because, having been unfortunate enough to lose both their previous infants, they wished nothing left untried that held out the least hope of saving this one. Accordingly we conveyed the infant to the Sick Children's Hospital, where Mr Stiles, without anæsthetic, made a long incision in the middle line of the neck, and by a careful dissection exposed the isthmus of the thyroid. The gland and isthmus were seen to be enveloped in a perfect network of congested veins. It being found impracticable to reach the trachea below the isthmus, Mr Stiles cautiously separated up the isthmus, which was a structure about the thickness of the adult little-finger, and passed two ligatures around it. By this time the respiratory intervals had become much lengthened, and the heart's action almost indistinguishable. When the first ligature was drawn tight the last effort at inspiration was made, and the heart ceased beating. The second ligature was tightened, the isthmus divided, and the trachea opened, but all efforts to restore animation were futile.[1]

The condition of congenital enlargement of the thyroid is a very rare one. On looking back over the past records of this Society I find no mention of similar cases recorded before it. Most of the better known books on diseases of infancy and childhood contain no reference to the condition. In Dr Ballantyne's recent work on Antenatal Pathology, however, the subject receives adequate treatment, and the literature is gone into with all Dr Ballantyne's characteristic carefulness and exhaustiveness. He there records a case seen by himself, of a fœtus between the third and fourth months which exhibited a general congestive enlargement of the tissues of the neck between the lower jaw and the manubrium sterni. The parents were free of any cervical enlargement. Mention is also made

of a case recorded in Edinburgh by Keiller (*Edin. Med. and Surg. Journal*, lxxii., 31, 1855), in which a large irregularly lobulated swelling in the region of the thyroid gland gave trouble by causing a forehead presentation: a case by Sir J. Y. Simpson (*Monthly Journ. Med. Soc.*, xx., 350, 1855), the tenth child of a non-goitrous woman, which was born prematurely, and on account of the pressure on the trachea, died in eight hours, the gland being as large as a hen's egg, and again causing forehead presentation: a case by A. R. Simpson (*Glasgow Med. Journ.*, 3 s. i. 181, 1866-67). In this case (and also, I understand, in the previous case, although I have not got at the original reference), the mother had been taking chlorate of potash throughout pregnancy with a view to the prevention of miscarriages and premature labours; the anterior fontanelle presented and labour was delayed. The thyroid seemed to be equally enlarged in its isthmus and lateral lobes. At first there was difficulty in respiration and deglutition, but, at the age of four years, the tumour was much shrunken, and the child, a male, appeared healthy. Dr Ballantyne also gives numerous references to cases published on the Continent, some of those recording enlargements as big as a fœtal head. As regards my own case, it was the mother's third pregnancy. Her first child was born at the eighth month and lived twenty-four hours, dying, as she expressed it, from "cordial failure." Her second lived five weeks; it was born just over the eighth month. She says its death was certified as from "blood-poisoning," and that it was blind of an eye as the result of neglect at the time of the birth on the part of the woman in attendance. No definite syphilitic history could be obtained. She came under my notice in the second month of her third pregnancy, and with the view of prolonging gestation I put her on chlorate of potash and iron, and kept her on it all through the pregnancy. She felt much better and stronger when taking it than in her previous pregnancies. The labour, as I have mentioned, came on prematurely

without apparent cause. I saw her in the forenoon, and examined her carefully. The tumour was much more like a full-time pregnancy as regards size, and was very tense, and I could not make out fœtal heart sounds. I thought it might be a case of hydramnios, in which surmise I think I was correct, for when I arrived just after the completion of labour, I observed the bed simply saturated with liquor amnii. In my forenoon examination of the case I could make out a parietal presentation, and the labour ended some hours sooner than I anticipated, the small size of the fœtus and the excess of liquor amnii probably contributing to this result. In my case the swelling in the neck did not seem as in the other cases referred to, to favour a forehead presentation by unduly extending the head. On the other hand the tightness of the skin over the swelling in the neck seemed rather to limit the degree of extension possible. Neither parent has any thyroid enlargement, nor have any of their relatives, and the mother never showed symptoms of thyroid inefficiency.

The etiology of the condition appears to be shrouded in mystery: but it is at least interesting to inquire, in view of the other cases I referred to recorded by J. Y. Simpson and A. R. Simpson, in which chlorate of potash had been administered throughout pregnancy, whether we are dealing merely with a curious coincidence, or whether there may be some real causal connection between the administration of the drug and the thyroid enlargement. Both circumstances are somewhat rare —the practice of giving chlorate of potash throughout pregnancy is not one very frequently carried out, and the thyroid enlargement in the fœtus is certainly a condition of great rarity, so that when we find the two circumstances combined in even three instances it makes us wonder if they can be causally connected. I leave it to those better versed in physiology and the actions of drugs upon the tissues and organs to invent a theory that would meet the case. Of course there is the

other side of the question—are not plenty of fœtuses born with no thyroid enlargement after the administration of chlorate of potash throughout the pregnancy of the mother? I cannot pretend to speak from much experience of this in my own practice, as I have not often employed this method, and cannot definitely remember of other cases in which I have been able to follow it right through. Quite recently and unexpectedly, however, additional evidence in support of the theory that the chlorate of potash may have had something to do with the enlargement in this case, has been forthcoming in the shape of two more recorded cases in which a similar result ensued. I have been in correspondence with Dr W. E. Fothergill of Manchester about a similar case occurring in his own practice, details of which he intends to publish shortly; and about the same time as I was to have read this paper at the last meeting of this Society Dr J. T. Hewatson of Birmingham published another case in the *British Medical Journal* (21st March 1903).

The President said the Society was much indebted to Dr Angus Macdonald for his very careful notes and comments on a somewhat rare condition. It was in former days a common custom to give chlorate of potash to pregnant women who had previously had abortions, and he thought that if there had been any relationship between the condition of thyroid enlargement and the giving of chlorate of potash many more cases of that condition would have been reported.

Dr Ballantyne said he was very interested to hear of this case. He then read a letter from Dr Fothergill of Manchester about a similar case, in which the latter promised later to give a paper on the subject to the Society. Dr Ballantyne had recently seen a case in which chlorate of potash had been given through the whole period of pregnancy. The patient had had a dead-born child in the first pregnancy, born a fortnight after

its time, and fibroid patches of thickening were found in the placenta. In the second pregnancy the patient showed a tendency to go beyond the full time, but was delivered of a living child, and there was no enlarged thyroid present. He thought the Society was specially indebted to Dr Macdonald for bringing the case forward so well.

Dr Berry Hart said it was an interesting case, and indeed a remarkable series of cases. It was strange that the condition did not seem to be more frequent, for chlorate of potash was often given.

Dr Oliphant Nicholson said there was good reason to believe that the fœtal thyroid was functionally active very early in pregnancy, perhaps supplementing under certain circumstances the maternal secretion during pregnancy. And he considered that it was fair to assume that when there was hypertrophy of the fœtal thyroid there had been some extra strain put upon it, possibly from deficiency of the thyroid secretion of the mother. It had been shown that when the fœtal thyroid was greatly enlarged at birth, and the child survived, that the gland gradually diminished in size.

Dr Angus Macdonald, in reply, thanked the Society for their reception of his paper. He pointed out that the great majority of cases of congenital enlargement of the thyroid were the children of goitrous children, and that this could not be the case if Dr Nicholson's theory was correct.

VI. PAPILLARY CYST OF THE LABIUM MINUS.

By Dr Jessie Macgregor.

Although of little clinical importance, the following case presents some points of interest which render it worthy of record.

The patient was unmarried, 28 years old, and in good general health except for well-marked neurasthenic symptoms.

Her sole reason for consulting a doctor was that she felt a small growth in the genital region, which gave rise to absolutely no local symptoms, but, by reason of the anxiety as to its nature, was causing much general deterioration of health. The growth had been first observed "about" three years before the date of consultation, and had increased very slightly during the interval. The patient could not be certain that it had not been present before she became aware of it. On examination the external genitals were found to be normal except for the presence of a small cystic growth (measuring $\frac{3}{4} \times \frac{1}{2}$ an inch) in the posterior third of the left labium minus, or more correctly, partly in the interlabial sulcus and partly in the labium itself. It had the usual translucent appearance and bluish tint of a cyst, but felt somewhat hard. It had had no surrounding infiltration, was freely movable, and quite painless to touch; the inguinal glands were not enlarged, and there was nothing suggestive of malignancy.

Notwithstanding the apparently simple nature of the cyst, it was judged wisest to remove it, in view of the mental distress its presence caused the patient. Eucaine was used as a local anæsthetic, the cyst was excised, and on excision was found to contain some clear serous fluid and, in addition, a branching papillary growth which incompletely filled its cavity. This growth consisted of many soft, dendritic processes radiating from a narrow pedicle-like base by which it was attached to the cyst wall. On microscopic examination it was found to be made up of fine, branching fibrous tissue processes, covered with well-formed epithelium (see Fig.). The epithelium for the most part consisted of tall columnar cells, but in some parts the cells were cubical in type, and at one point, probably the point of attachment of the pedicle to the cyst wall, there was a distinct transition from columnar to flattened, stratified epithelium. There was no evidence of malignancy in the epithelial growth. In some parts there was an apparently irregular

proliferation of epithelium, but this was due to compression of the regularly formed cells, not to true overgrowth. In all its characters the growth resembled an ovarian papillary cystoma.

It seemed so remarkable to find in this situation a structure which in its macroscopic and microscopic appearances closely simulated an ovarian papillary cystoma that a search was made in gynæcological literature for other similar cases. Only two were found. Werth, in 1878 (*Centralbl. f. Gynäkol.*), described a cyst which, in all particulars, closely resembled that mentioned above. It was situated in the interlabial sulcus at the junction

of its upper and middle third, and contained a papillary growth which, to judge from Werth's description, was exactly the same as that I have given. The fluid contents of the cyst were turbid.

The second case is one briefly mentioned by Gebhardt in his *Path. Anat. der weiblichen Sexualorgane.* In his case the cyst was placed superficially in the posterior part of the labium majus. It also contained a papillary growth "which in its histological appearances was identical with the papillary tumours of the ovary."

The interest of these three cases lies in the question of their origin, since a papillary cystoma in this region is an unexpected

phenomenon. Three possible sources have been suggested—(1) the lower end of the Wolffian duct; (2) Bartholin's gland; (3) aberrant portions of glands in the interlabial sulcus.

The nature of the cyst and its strong resemblance to an ovarian papillary cystoma strongly suggest the Wolffian duct, which is held to be the origin of these ovarian growths. On the other hand, the lower end of this duct is described as terminating above the hymen, so that the site of the small cyst seems too far removed to be derived from it, unless it is possible that the end of the duct may, in abnormal cases, end considerably lower than is supposed.

The gland of Bartholin is also remote from the site of the cyst, nor does there seem any reason why an outlying spur of Bartholin's gland should take on papillary growth. No connection between the cyst and the gland has been traced.

The third possibility, aberrant portions of glands in the sulcus, is supported by the fact that Schauta has seen remnants of tubular glands in this position. Their exact nature and origin are not known, but it seems quite possible that blind, functionless, glandular tubes might easily give rise to cysts such as those described above.

Although only three cases of this variety of labial cyst have been found on record, it is quite possible that the insignificant character of the growth may be responsible for the paucity of information. The three cases are, however, so distinctive in their character, that, I think, we must add a non-malignant papillary cystic growth to our list of neoplasms which may occur in the labia.

The President thanked Dr Jessie Macgregor for her paper.

Dr Berry Hart thought the specimen as seen under the microscope was very like a papillomatous ovarian tumour. He was not sure that the Wolffian duct could be excluded as the

cause of the condition. If it were the cause it would explain the condition very thoroughly for it comes from the ectoderm.

Dr Ballantyne considered it not unlike the remnants of the hymen.

VII. CASE OF CHORION-EPITHELIOMA (DECIDUOMA MALIGNUM).

By J. M. Munro Kerr, M.B., Obstetric Physician, Maternity Hospital, Glasgow; and John H. Teacher, M.B., Pathological Institute, Western Infirmary, Glasgow.

Clinical Notes by Dr Munro Kerr.

Mrs D., a nullipara, aged 23, was admitted to Ward XVII., Western Infirmary, on the 17th May 1902, suffering from pain in the abdomen and hæmorrhage from the uterus. There was a history of a miscarriage in the preceding September. In March she was curetted by her own doctor, Dr Graham of Whiteinch. After this she states that she suffered from pain in the abdomen and constant bleeding. She felt ill and was often very feverish. On admission to Hospital the patient appeared very ill. She was extremely anæmic, had a pulse over 130, and temperature varying from 103° to 105°. On 23rd May the uterus was cleared out with the fingers, and a curette and several masses of what were regarded as placental tissue were removed. These were unfortunately not preserved for examination microscopically. In the twelve hours following the operation the temperature fell from 106° to nearly normal, but ran up again slightly during the following twenty-four hours.

For a month the patient remained fairly well, with the exception of one rather sharp hæmorrhage. The temperature, however, after that time began to show an evening rise, registering 105° on one occasion. Some septic infection was

suspected and intra-uterine douching was resorted to, but it had little effect.

At the end of July I came on duty in the ward and considering the case one of deciduoma malignum in all probability, I examined the patient under an anæsthetic. I readily got my finger into the uterus and felt a large rough mass up towards the fundus. Most profuse bleeding now occurred, and indeed could only be controlled by pulling on the uterus. The patient was extremely collapsed, but I proceeded to remove the uterus, and employed ligatures for the broad ligaments. She died on the evening of the operation; indeed, she never recovered from the shock although normal saline solution was transfused.

A post-mortem examination was absolutely refused, and, therefore, it is impossible to say whether metastasis had occurred. A node in the vagina was felt which bled very readily, and it is just possible it was a metastatic growth.

REMARKS.—By the time this patient came into my hands the history of the illness was so clearly that of chorion-epithelioma (deciduoma malignum) that there was no difficulty in arriving at such a diagnosis. The appearance of the tumour after removal confirmed that, and, as will be seen from the report by Dr Teacher, microscopically the growth presented the typical appearances of chorion-epithelioma.

As regards the operation I cannot help feeling that if I had employed clamps, as I usually do in this operation instead of ligatures for the broad ligaments, I could have removed the uterus much more quickly. The tissue of the broad ligaments was very soft, and the ligatures repeatedly cut through it while I tightened the knots. Had the patient been saved a little more blood it is possible that the result might have been different. This is all the more to be regretted in this case, because, as far as one could judge, there were no metastases with the exception of the little nodule in the vagina. The broad ligaments were certainly quite free and the uterus was quite

freely movable. No enlarged glands were met during the operation. For the pathological investigation of the tumour I have to thank my friend Dr Teacher.

Pathological Report by Dr Teacher.

The uterus had been laid open from the front before it came into my hands. The tumour consisted of a raised nodular mass about as large as a five-shilling piece, occupying the fundus and posterior wall of the uterus. The tumour was partly covered by mucous membrane, partly ulcerated and to a considerable extent appeared to consist of firm blood-clot.

In section most of the internal parts of the tumour are seen to be old blood-clot enclosing more or less of necrosed tumour tissue. The living tumour tissue forms, as it were, the floor of an ulcer, and lies between the clot and the uterine muscle.

Microscopically it presents the typical structure of a chorion-epithelioma, but it shows an unusual amount of the cells which are regarded as transition forms between the Langhan's layer of the chorion-epithelioma and the syncytium. These present a superficial likeness to decidua cells, but have relatively far larger nuclei and a different protoplasmic structure, so that there is no real danger of confusing the two.

The typical elements are—

(1) Multinucleated masses of protoplasm of all shapes and sizes, rounded, elongated, and irregular bands and whorls. They are often much vacuolated, and the vacuoles may contain blood or leucocytes. Their protoplasm is opaque and stained deeply with eosin and dyes of that class. The nuclei vary greatly, many of them being small homogeneous and darkly stained; but all the varieties are seen up to forms which are very large and vesicular, showing a well marked intra-nuclear network and large nucleoli. Karyokinetic figures are not seen in the syncytia.

(2) Individual cells of polyhedral shape, with single nucleus

and very clear finely reticular protoplasm, arranged in groups which are usually enclosed by the sprawling masses of syncytium very much as in the normal placenta. These cells vary considerably in size, for the most part being much larger than the typical Langhan's layer or the uterine epithelial cell. Karyokinetic figures are numerous. The nuclei of both these forms are larger than those of any of the adjacent maternal cells.

(3) Cells with one, two, three, or more nuclei, and with protoplasm presenting all characters intermediate between the preceding types. The nuclei for the most part are of very large size, contrasting strongly with those of the unaltered Langhan's layer cells, and still more with the small nuclei of the maternal tissues. They are rich in chromatin which forms a distinct network and contain large nucleoli. All stages in the development of these from Langhan's layer cells are readily traceable. There are also individual cells which have one or more nuclei and in general characters appear to be distinctly derivatives of the syncytium.

The individual cells form a large part of the cell masses, and especially they are found where the tumour is infiltrating maternal tissues.

In the cell masses there is no connective tissue stroma, whether alveolar like that of a carcinoma or more diffuse like that of a sarcoma, and no blood-vessels. The tumour cells infiltrate any maternal tissues with which they are in contact. They are also seen in the blood-vessels, either growing into their mouths and infiltrating their walls from within or creeping in the wall under the endothelium.

Evidence of destruction of the maternal tissues in the way of atrophying muscle cells and shreds of connective tissue among the tumour cells is very clear. There is also distinct evidence of inflammatory reaction in the connective tissue. The tumour tissue is broken up by masses of extravasated blood, and where this has been clotted for some time the

tumour cells show evidence of degeneration amounting in the innermost parts to complete necrosis. These clots and also the fluid blood in the maternal vessels contain large numbers of polymorphonuclear leucocytes. The uterine mucous membrane shows marked inflammatory infiltration, but no change in the direction of decidua. The uterine glands are quite distinct and characteristic.

Dr Teacher showed a large number of lantern slides in illustration of his report.

Dr Haultain said that Dr Teacher had honoured them by coming there to-night. Some time ago it had been his good fortune to come across a very typical case of this disease at a time when it was a somewhat rare disease, and in looking up the literature of the subject he was very deeply impressed with the paper that Dr Teacher had at that time produced along with Dr Kelly of Glasgow. For a time the subject was one of the most debatable in pathology as far as gynæcology was concerned, and Dr Teacher had impressed him with the attitude he took up, following the views of Marchand as to the origin of these cells from the trophoblastic layers, or from the fœtal epithelium. At that time the majority of observers thought it was a sarcoma of the uterus which had nothing to do with pregnancy. From Dr Teacher's paper at that time, and from examining his own specimen, he could not but corroborate in every detail what Dr Teacher said. He had gone up to London to tell the result, but was met with the same opinion that had been previously held there, that it was a sarcoma. But he thought that even the London observers had now come round to the epithelial origin of this disease. He knew Dr Teacher had spared no time, expense, or patience in going about and collecting the various cases of this disease reported on the Continent or in Great Britain, and as the result of the information collected the epithelial origin of the disease was now placed on an undeniable

basis. Dr Teacher had not touched on the pathology of finding the same thing in the testicle of the male, and in a dermoid in the chest of a male, but he knew he had also gone deeply into that subject. Not only the pathological aspect of the disease was interesting but also the clinical aspect, and, indeed, the latter was the more important. The question was when was it legitimate to remove a uterus after a case of pregnancy in cases of hæmorrhage where these syncitial masses were obtained. At first one was inclined to think that whenever after curetting these syncitial masses and proliferation of cells were found, the uterus should be at once removed. Now they knew that after some cases, as for example myxoma of the chorion, where it was quite possible that some tissue had been left, and indeed was likely to be left after curetting, there was no return of the disease, which therefore showed that such a radical operation as hysterectomy was quite unnecessary. But if after one curetting they had recurrence of severe hæmorrhage, then it was almost their duty to remove the uterus. But further, he would suggest, that before removal the cervix should be dilated, and the finger introduced to feel if there was a tumour. He knew certainly of one case where there was evidence of these syncitial masses after curetting, in which the uterus was removed, and where after removal it was found clean and clear. With regard to metastasis, there were several interesting cases reported—one by Dr Bruce in association with Dr Inglis in which there was no evidence of any uterine disease, and yet there was evidence of the disease throughout the body; also a case where in an ordinary pregnancy without any evidence of a mole, there were found to be metastases in the vagina.

Dr Berry Hart said he was specially interested in the subject in relation to hydatid mole, and they must probe the matter to the core, for if they did so, examining thoroughly all the specimens obtained, it might throw a great deal of light on

the question of malignant diseases. The great interest of the subject of "deciduoma malignum" was that they had to begin on a physiological basis and gradually work up to the pathological condition described. On the villus they had a covering which had two layers—Langhan's layer and the syncitium. The origin of this covering of the villus was ectodermic, and was not from maternal tissue. There was a great deal of dispute on this point, and some able observers had tried to hold that the syncitium was derived from uterine epithelium. It was interesting to hear of the case of ovarian pregnancy where the syncitium was described on the villi, for in an ovarian pregnancy there was no uterine epithelium. But they must not be too definite for it might be from an endothelial condition, and there was undoubtedly endothelium in the ovary. There was great difficulty in the study of "deciduoma malignum," and there was no use in hiding the fact, that they did not know the pathological chemistry in regard to pregnancy. In the normal villus a distinct change took place in the villus and villous covering. The syncitial layer disappeared and withered. The Langhan's layer became smaller as pregnancy went on, and the connective tissue and epithelial tissue became differentiated. What is the cause of this differentiation? He had advanced the theory that it was due to the fœtal thyroid differentiating from myxomatous tissue right up to fibrous tissue. If they examined hydatid mole they found masses of almost undifferentiated tissue. What was more likely than that it should assume a malignant type? There was no evidence of deficiency of thyroid secretion, but as far as he knew there was no test as to when there was a deficiency of that secretion in adult people, though it would be a great thing if they had the means of testing for such deficiency. The fact had come out that "deciduoma malignum," was the effect of some development of the outer covering of the villus; but as yet why that should happen in some cases, and not in others, was not known. In a case in

which he had found distinct syncitial masses, but in which the clinical symptoms of "deciduoma malignum" were wanting, the patient had afterwards become pregnant, and had been delivered of a full-time child. In this case he had given the patient thyroid, but whether that had had any effect he could not say, but he thought it possible that the thyroid secretion might attack these masses in the blood and render them harmless.

Dr Ballantyne quite agreed with the others in admiring the beauty of the sections which had been shown, and the way in which they had been described. Some slight looseness of nomenclature had crept into the subject as in speaking of layers as of fœtal or embryonic origin, whereas at the time the trophoblast was formed there was neither embryo nor fœtus. He considered, therefore, that they should use the term ovular, which would mean that the tissue rose from the side of the new organism, and not from the maternal side. Drs Teacher and Munro Kerr agreed that both Langhan's layer and the syncitium were fœtal, and the latter was probably derived from the former or active layer. In some cases of post-mature placenta this has been borne out by the fact that Langhan's layer was absent, and the syncitium reduced to a very thin layer, showing that the active part had become senile. With regard to the question Dr Haultain had touched upon as to observations of "deciduoma malignum" in the male, both syncitium and Langhan's layer were present in some specimens, and it was, therefore, concluded that not only fœtal structures but fœtal membranes may be found and may be propagated. The suggestion had been made that there was the possibility of obtaining an antitoxin from the placenta, and of immunising animals and obtaining a placental serum that could be used in other cancers.

Dr Berry Hart did not consider that the idea of an antitoxin was such a will-o'-the-wisp. He had been struck with the fact that a patient did not often have eclampsia a second

time. It was mostly found in primiparous women; and so with the serious vomiting of pregnancy. It was quite possible that in connection with normal pregnancy an antitoxin developed, protecting the woman from subsequent eclampsia and sickness.

Dr Teacher, in reply, said there were many points that might be spoken about. With regard to teratomata, he had some preparations that he would hope to show at some other time to the Society. With regard to what Dr Haultain had referred to, Dr Ritchie of Oxford had a teratoma of the anterior mediastinum which was a typical chorion-epithelioma. The nomenclature of the subject was a little confusing—the correct term would be trophoblast, the special organ of the ovum. The term epiblast should be reserved for that arising from the outer layer of the ovum after it had been differentiated.

MEETING VII.—JUNE 18, 1903.

This Meeting was held in the Faculty Hall, Glasgow, in conjunction with the Glasgow Obstetrical and Gynæcological Society. Dr Nigel Stark, President of the Glasgow Society, occupied the chair.

Dr Howard Kelly, Baltimore, opened a discussion on "The Selection of Methods in Abdominal Hysterectomy." He advocated a wise conservatism in dealing with the pathological conditions of the pelvic organs. He was convinced that these organs were daily ruthlessly sacrificed in many clinics in cases in which, with a little more effort, they might have been spared to the infinite advantage of the patient. He strongly recommended the leaving the ovaries or one of them unless permanently diseased. Next in importance came the tubes, and

lastly the uterus. Dr Kelly then proceeded to describe various methods of radical operation, and illustrated his remarks by chalk diagrams. (1) The classic method was described where the ovarian vessels, the round ligament and uterine vessels, were secured first on one side and then on the other, after which the uterus was removed. (2) Another method was the Pryor-Kelly method. The ovarian vessels of one side were tied, then the uterine of the same side, the cervix was then divided above the vaginal vault, and the uterine vessels of the opposite side exposed and caught. Lastly, as the uterus was lifted out of the abdomen, the remaining ovarian vessels were caught. (3) The third method consisted in separating the bladder, cutting through the cervix and ligature of the vessels seriatim from below. (4) In the fourth method the cervix was cut through from behind. (5) The last consisted in bisection of the uterus down to the cervix, then lateral section to separate the cervix from one half of the uterus. The other half of the uterus was then cut through above the cervix, and the uterine and ovarian vessels secured from below upwards, first on one side and then on the other. In conclusion, Dr Kelly showed which operation was indicated in different difficult cases.

Dr Berry Hart, Professor Cameron, Dr Brewis, Dr Kelly (Glasgow), Dr Haultain, Mr Maylard, Professor Kynoch, Dr Haig Ferguson, Dr Buist (Dundee), and Dr Stark (the President), took part in the discussion which followed, and Dr Howard Kelly replied.

The Fellows of the two Societies afterwards dined together in the Windsor Hotel, Dr Stark in the chair.

Dr Howard Kelly's paper was published *in extenso* in the *Glasgow Medical Journal*, October 1903.

MEETING VIII.—JULY 8, 1903.

Dr JAMES RITCHIE, *President, in the Chair.*

I. The following gentlemen were elected Honorary Fellows of the Society:—Professor O. Morisani, Naples; Dr G. J. Engelmann, Boston; Professor Schauta, Vienna; Dr Paul Segond, Paris.

II. *Professor Simpson* showed (*a*) A FIBROID TUMOUR weighing 52 lbs., removed from a lady, æt. 63, whom he had seen nine years previously, when he had suggested palliative measures. At the operation it was found impossible to remove the tubes and ovaries on both sides. The veins, especially in one side, were as large as coils of small intestine. The patient had recovered without a drawback. Dr M'Vie, under whose care the patient had been, gave a short history of the case. The patient was a married nulliparous woman. Her attention had been called to the abdominal enlargement in 1877. On two occasions she had consulted Dr Keith, who had each time ordered ergot. Then some years later, on Dr M'Vie's advice, she had consulted Professor Simpson, who, thinking the menopause was near and that the tumour might then cease growth and possibly shrink, recommended palliative measures. At that time the tumour was about the size of a full-time pregnancy. Some years later, Professor Simpson being out of town, Sir Halliday Croom was consulted, and as the mortality of operation upon such cases at that time was 25 per cent., operation was not proceeded with. With the increase in the size of the tumour all physical activity became impossible, but the patient's mental activity was as marked as ever, and becoming centred upon herself and her ailments. The distress was so marked that Professor Simpson's advice was again sought, and operation was under-

taken. The menopause had come on at 50 years of age. The symptoms referable directly to the tumour were very slight—no bladder symptoms, and never more constipation than an ordinary dose of a mild aperient could not correct. (*b*) A TUBAL GESTATION with a cast of the uterus thrown off on the very day on which the operation had been arranged for. (*c*) HYDROSALPINX of a curious form. (*d*) What was probably a BROAD LIGAMENT CYST.

III. *Dr Haultain* showed (*a*) UTERUS WITH MULTIPLE FIBROIDS. The patient had consulted a specialist in the South who had advised strongly against operation. Invalidism having lasted for four years longer, Dr Haultain was consulted, and he had advised hysterectomy. Consent not being obtained electrical treatment was tried without any avail, and eventually operation was consented to. Within the uterus was a movable polypus. (*b*) A FIBROID growing from the cervix which had dipped between the rectum and the posterior vaginal wall. (*c*) A PYOSALPINX from a patient who was confined two months before, and in whom acute symptoms of puerperal fever had supervened. She had, however, recovered from these symptoms, and then pain in one side had followed, with an occasional temperature of 104° F. On the other side there was an abscess in the ovary. (*d*) UTERUS from a patient whom he had curetted on two previous occasions. The hæmorrhage had recurred after a period of exemption with renewed force each time, and had been very profuse. He, therefore, decided to remove the uterus, and upon opening the specimen afterwards found a large ulcerated surface in the posterior wall. This from the appearance was thought to be malignant, but turned out to be an ordinary endometritis. (*e*) TWO OVARIES SHOWING FOLLICULITIS removed from a girl, æt. 25, who had suffered from marked chlorosis, for which condition and "neuralgia of the ovary" she had been treated in the

Infirmary three years ago for five months. She had become worse and worse, and taking to morphia, had become a morphimaniac. (*f*) PORTION OF AN OVARY. One ovary had been removed from the patient by another surgeon eighteen months ago, the other being at the same time resected. It was found to be in an extremely matted condition, adherent to the bowel, and the patient was suffering from intense pain.

IV. *Dr Brewis*, showed A TUMOUR weighing about 26 lbs. removed from a patient, æt. 44. She had been seen twenty years ago by Keith, who had recommended operation, but as there were practically no symptoms, consent was not obtained. Until the last six months the patient had been working in the fields, but since that time had been suffering from great attacks of pain, and peritonitis was suspected. Upon operation no peritonitis was found. A great part of the tumour was intra-ligamentous. There were numerous calcareous particles on the surface of the tumour. (*b*) SEVERAL SMALL FIBROID TUMOURS, all of which had given rise to marked symptoms, a contrast to the large tumour where there were for a long time no symptoms at all. (*c*) KIDNEY removed for adenoma of the supra-renal gland.

V. CASES IN MY PRIVATE PRACTICE WHICH ILLUSTRATE SOME OF THE RISKS OF ALLOWING LACTATION AND PREGNANCY TO OVERLAP.

By HENRY M. CHURCH, B.Sc., M.D., F.R.C.P. Ed., Edinburgh.

IN accordance with the request of our President in his opening address that Fellows should bring, from their own practice, cases that might be of interest under the notice of this Society, I have taken ten cases from my midwifery note-book in order to illustrate a few of the evils arising from the unfortunate

occurrence of pregnancy while lactation is still going on. These notes have been supplemented by special inquiry of the mothers whose memory, even after the lapse of many years, is wonderfully acute concerning the details of their offspring. Some obstetricians deny that any evils result from the overlapping referred to, or if they do arise, that nature soon puts matters right.

My own experience, founded on such cases as I relate, is not quite in accordance with this view. The subject would seem, however, to have been little inquired into, so much so, that in most of the text-books there is comparative silence regarding pregnancy being a bar to nursing. All authorities agree that both for the mother's and the child's sake, syphilitic, tuberculous, and epileptic mothers, and those in whom from any cause the *Vires Vitæ* are lowered, should not nurse even if sufficient milk be present. Pregnancy has not been included in this category, but the changes in the milk in that condition are so subtle, but so pronounced, that pregnancy also must be classed with the pathological states which counter-indicate lactation. When we remember that three parties are involved in this overlapping, the mother, the suckling, and the embryo, and what a large number of chemical, physiological, and psychological points are involved in such an occurrence, the importance of the question becomes apparent and every case bearing upon it becomes of value. Some time ago, a doctor in large midwifery practice in Manchester[1] remarked that he believed that one half of the married working women of that city conceived during lactation, This surely must be figurative language. At all events it far exceeds my own experience which is about 30 in my 1000 cases, or in other words, about 3 per cent. only where the lactation and pregnancy have gone on together for any time.

If the former statement is at all correct we are brought face to face with a canker at the very root of our national vitality,

[1] Buck's *Hygiene.*

at least as far as our large cities are concerned. I am aware that in a limited private practice such as my own, the material is too small for purely scientific purposes, and sufficient for little more than to provide finger posts of dangers which the family doctor may have to some extent under his control. It is a pity that in analysing the cases in the Sick Children's Hospitals, and also in lying-in-institutions, information cannot be got in this direction. Such omission is a loss. No schedule of inquiry that I have seen takes up this point of overlapping. Were there such an inquiry, it would probably be found (1) that the suckling was, or became, a delicate child, that he at one or other stage of his development suffered from some affection of the nervous system, and that he was the mentally weak one of the family; (2) that during lactation the embryo was prematurely expelled from the uterus, or if it reached full time that it, in many cases, though not in all, did so with lowered vitality and handicapped in some way or other for the race of life; and, (3) that the mother's health was generally undermined for a longer or a shorter time. Seldom would it appear that the mother had blood and strength enough for the welfare of the trio. These opinions the following cases seem to support:—

CASE I.—Mrs H., æt. 24, nursed her first child, a girl, for ten months. Within five months of weaning this child, she had a male child at full time. She, therefore, suckled the first child for four months during her pregnancy with the second. The first child died of acute meningitis between three or four years of age. She has had nine healthy children who, with one exception, are all alive, nor has she had any miscarriage. In this case the mother's health does not appear to have suffered during the overlapping. The whole evil fell upon the suckling not at the time, but later on, at the age when meningitis is most likely to occur.

CASE II.—Mrs C., married at 22, has also had nine children. She had her first four children at full time in rapid succession in four years, had nursed them all, and during these four years, had never once menstruated. Her eldest child, a girl, was still a nursling while her mother was pregnant for two months. She was a small thin child, with slow development, first tooth appearing at fifteen months; did not walk till she was two years of age; had St Vitus' dance at ten, and has ever since been a sensitive nervous girl, though otherwise in good health. The next child, a boy, the fœtus during the overlapping, died of meningitis with convulsions when four and a half years of age. The mother's health never appears to have been affected. In this case it will be observed that it was the second child, the fœtus during the overlapping that died of meningitis. What was then the suckling is now a delicate girl of twenty-four years of age. Both the child of the lactation and of the pregnancy thus suffered. The other children were healthy.

CASE III.—Mrs K. nursed all her seven children till teething. Between her third aud fourth child, both boys, she inadvertently allowed lactation to go on for about four months simultaneously with pregnancy. She had no menstruation after the third child. The pregnancy went on satisfactorily, the mother not appearing to suffer. The suckling, at eight years of age, after scarlet fever had nephritis and violent convulsions which have left him an imbecile. It has been observed in other cases that if the suckling escapes meningeal troubles, he is likely during the course of the exanthemata or other infantile complaints to develop some cerebral complications. All the other children in this family are strong and healthy.

CASE IV.—Mrs S., after nursing a male child for twelve months had a miscarriage at the fourth month, one month after

weaning her child. The lactation overlapped the pregnancy three months; the imperfectly nourished ovum coming away shortly after the suckling had been taken from the breast. In such cases as this the uterus and fœtus seemed starved, the breasts commanding the monopoly of blood. The miscarriage in such a case may also be induced by the mammary irritation of the suckling's lips acting reflexly and causing contraction of the uterus and the emptying of its contents. In this connection it would almost appear that prolonged lactation might be used as a means of inducing abortion.

CASE V.—Mrs P. suckled one of her children, a boy, for nine months. She took scarlet fever, and immediately had a miscarriage at the third month. In this case there was the additional element of scarlet fever as a cause of abortion. The mother was not aware of her pregnancy, but was in an exhausted state of health before the advent of the fever. The suckling took the disease from his mother at once, and though now a lad of twenty-two, has always been delicate and "weak voiced." Her other ten children are strong. This woman had passed through scarlet fever in her youth, yet, in her weakened condition, she took it again. Contrary to the general impression evidence has been given to show in a recent paper[1] by Dr Ballantyne, that the serum of the blood during pregnancy has a greater bactericidal action than the blood in the non-pregnant state. One would have expected, therefore, that this patient would have been in a sense doubly protected from scarlet fever. Protected as she was, however, in these directions, the exhaustion resulting from carrying on the functions of lactation and pregnancy simultaneously, seems to have given the fever an easy invasion. In this case there was disaster to mother, suckling, and embryo.

[1] *Scot. Med. and Surg. Journ.*, October 1902.

CASE VI.—Here too we have all three suffering. Mrs D., æt. 51, has had twelve children, whom she nursed till teething. She has had two miscarriages. Her fourth child, a boy, she nursed for nine months, but had to discontinue him at the breast on account of a miscarriage which took place tardily during the third month of gestation. The mother, a strong country woman, was much pulled down before it occurred. She was quite unaware that she was again pregnant. As regards the suckling she states that he had all the infantile diseases more severely than the other children, that the period of teething was very trying, and that now, he, a lad of eighteen, has "scarcely a single tooth in his head."

CASE VII.—Mrs B., has had six children, the last two being twins. At the age of thirty she suckled her second child, a boy, for two months after having become pregnant with her third child, a girl. The mother got a sudden shock on hearing of the death of her father. Immediately after this the suckling refused the breast though there seemed plenty of milk for him. During the whole of the ensuing gestation she had poor health and could only suckle her child two weeks. This child, a girl, had always delicate health. In this case, shock to the mother seems so suddenly to have altered her milk that the suckling, after tasting it, declined at once to continue at the breast. If emotion under ordinary circumstances effects the constitution of the milk, much more markedly is it likely to do so in the pregnant condition when the physics of the blood are considerably altered. It is not known what chemical changes are brought about by the vaso-motor disturbances, and altered cellular action in the mammary gland, which mental disturbances cause. But it is in everyday experience that pleasurable emotions are followed by copious secretion; depressing emotions, by a diminished secretion of milk; while the contraction of the blood-vessels which sudden emotion causes, may suppress the

milk altogether. Contresse gives the case of an irascible mother who lost ten children during lactation, while the eleventh throve perfectly at the breast of a placid wet nurse.

In such cases as that of Mrs B., the suckling can defend itself from disaster by declining what nature shows it is a food injurious to its welfare. The embryo must abide its fate. It is worthy of notice that in this case the nursling took acceptably enough for two months the milk of his again pregnant mother, which is exceptional. The probability is that the cases we meet with in practice in which the nursling, suddenly and unaccountably, declines the breasts, are cases where the mother has again conceived. Menstruation during lactation may have a similar, though less marked, effect. At present I have a case of twins both of whom vomited and had dark stools during their mother's first menstruation. The following tables of Professor Marchand show the changes in the milk before, during, and after menstruation.

TABLE I.—MOTHER'S MILK.[1]

	First Individual.	Second Individual.	Third Individual.
Six Days before Menstruation.			
Butter	32·24	28·56	37·24
Milk-sugar	68·25	69·31	69·75
Casein and albumen	20·20	16·75	18·40
Salts	1·19	1·74	1·82
Water	877·41	883·64	872·79
During Menstruation.			
Butter	27·45	30·32	33·15
Milk-sugar	65·46	65·15	64·42
Casein and albumen	21·34	17·21	15·10
Salts	1·98	1·80	1·89
Water	883·77	885·52	881·44

[1] Taken from Marchand's Tables, *Journ. Obst.*, July 1877.

TABLE I.—MOTHER'S MILK (*continued*).

Six Days after Menstruation.

	FIRST INDIVIDUAL.	SECOND INDIVIDUAL.	THIRD INDIVIDUAL.
Butter	29·41	29·24	35·54
Milk-sugar	69·15	68·87	68·95
Casein and albumen	20·90	16·47	16·27
Salts	1·89	1·82	1·72
Water	878·65	883·60	877·42

To return to Mrs B.'s case. This patient had much sorrow and worry during her pregnancy. This, together with the overlapping in its early embryonic life, may have accounted for the delicacy of the girl that was born, now a young lady of twenty-two. Her delicacy has shown itself in very poor teeth, a deeply arched palate, and delayed and irregular menstruation. It may be interesting to note, in the light of the thyroid treatment, in certain conditions in pregnancy, that the mother subsequently developed well-marked exophthalmus, after which she had twins, one of which died, while the survivor has always been subject to epileptic fits. The other children are strong and healthy.

CASE VIII.—Mrs T., æt. 20, nursed her eldest child for twelve months, her second child being born at full time nineteen months after the first, thus overlapping two months. The suckling died of diabetes mellitus at sixteen years of age. The other eight children are healthy. The mother reminds me that he nearly died of whooping-cough when a young child, and that he had infantile diseases more severely than the others. His teeth appeared at fourteen months, but they were always poor, "brittle and irregular, and had nearly disappeared at the time of his death."

In the last two cases, and indeed of most of the cases might it have been said, special reference has been made to the prematurely decayed condition of the teeth. In the one case,

to their faulty state in the suckling, in the other to an equally bad state in the child whose embryonic life was begun, and so far continued while the mother was still nursing. Apart from all constitutional taints in the parents, it is evident that the lowering of the mother's health which this pathological overlapping must occasion, is the explanation of many a case of rickets, dwarfed stature, and bad teeth which we meet with, especially in crowded city life and unhealthy surroundings. We have to remember also, and this is important, that the primitive dental groove in the embryo forms about the sixth week of intra-uterine life, just at a time when the healthy development of the embryo is handicapped by a drain upon the mother's health and strength, in her performance of a double function.[1]

Cases are recorded of wonderful changes in the osseous and dental systems in the lower animals from simple change of diet in the mother during pregnancy. By scientific analogy such cases have a bearing upon our subject. For instance a case is recorded[2] of a lioness which several times running had a cub with a cleft palate. She had always been fed with meat alone, without the bone. In a subsequent pregnancy when both meat and bone were given her, she brought forth a cub with a perfect palate. With this addition the bone provided the fat and lime necessary for healthy boney development. In other departments of natural history the effects of feeding upon development will occur to us. Inquiry, therefore, on the influence of diet on the mother and her offspring during the period of gestation seems very practically within the region of dietetic science. There can be but little doubt that many evils, both to mother and child, might be averted by a

[1] At this period also, it is well to avoid dental operations on the mother, both on account of the influence upon the fœtus of so-called maternal impressions, and on account also of the altered metabolism which inhalation of chloroform induces.

[2] *Berl. klin. Wchnschr.*, p. 668, 1875.

scientifically assorted diet, and at the same time a better *dentition* secured.

CASE IX.—Mrs R., had her first child, a girl, in May 1901, and her second, a boy, in July 1902. She suckled the first till the middle of January 1902, thus overlapping her second pregnancy for more than three months. The second child seems strong and was long suckled; but the first, though healthy enough, is mentally very backward in development, and presents the usual mongolian features and characteristics. She had no teeth till fourteen months, and now at two years cannot speak and can scarcely stand. The mother had only one menstruation when she conceived again. During the overlapping her health did not suffer in any way. The only member of the trio which suffered was the suckling. In both confinements forceps were required.

CASE X.—The last case that I have to relate to you is that of Mrs M., the youngest member of a large family. She was married when about twenty-five. Within the first year of marriage she had two children, both girls. She nursed the first for three months after becoming pregnant with the second. The first child the mother described as a "skinny child, not plump and sound like the others." She was always very sensitive, suffered from frequent headaches. When she was ten years of age, and now at twenty-one, is thin, nervous, and unable for exertion like the other five members of the family. Her teeth are soft and much decayed. Mrs M. had no symptoms of pregnancy, but, on account of her indifferent health, called in the doctor, who explained her probable condition, and weaned the child at once. After weaning, she rapidly improved in health, and in due time brought forth her second child, a strong girl, whom she suckled for eight months.

In this case both mother and suckling suffered. Twenty years after this event, the mother developed scirrhus of the right mamma, which recurred in a year after the primary operation for its removal. She is still alive, six years afterwards, but has secondary new growths, most prominent in the mesenteric glands and mesentery, and other manifestations of the disease in the neck and hip, and also in the uterus. It is not improbable that this invasion of her system with cancer, at the climacteric period of life, may be traced to the undue stimulus, both of breasts and uterus, by the double strain at the beginning of her child-bearing period. When the life work of these organs is over, they are left with a tissue of lowered vitality—lowered in proportion to their former excess of function and compared with cells of unstable growth and reproductions. Thus may be brought about that embryonic condition of cells, either in breast or uterus, from which cancer stroma is so apt to develop. In Paget's disease it has been shown that a chronic inflammation of the skin of the nipple and areola may be followed by cancer of the breast. In like manner may not the irritation of the breast, occasioned by unnatural conditions of lactation, occurring even long beforehand, as in Mrs M.'s case, be brought into line with the development of scirrhus of that organ when its function has come to an end. It has lately appeared through official evidence[1] that cancer and sarcoma are common in India. There and in the East generally lactation is more prolonged than in European countries. Such a report we should expect if the foregoing reasoning is correct. In our cancer hospitals it may be that more minute inquiry into the history of the patients might bring out some association of malignant disease with the too frequent repetition of normal processes. And as regards general practice of over thirty years, my own observation induces the belief that one of the factors in the production of neoplasms of a malignant nature, in the organs

[1] *Brit. Med. Journ.*, London, 14th March 1903.

of the alimentary system at least, may be ascribed to excess of function; in other words, to over-eating.

These ten selected cases are sufficient to point out the importance of the subject of this paper. The possible dangers to mother, suckling, and embryo, a few only of which I have mentioned, may be, to a great extent, averted by a little tact on the part of the family doctor in getting early information regarding the recurrence of pregnancy. Even before the mother is aware of her condition, symptoms in her own health, as well as disorders in the suckling, may determine the doctor to advise the weaning of the child, or at least to be watchful of the case as one of pregnancy. Such is the reflex irritability in the digestive organism of some children that, ere long, colic and diarrhœa in the child may give rise to serious alarm, and reveal the mother's condition. In some children there is little disturbance. As we have seen from the preceding tables the breast milk is markedly altered during menstruation. Much more is it changed during pregnancy. I cannot find any tabulated analysis, but according to Daris the solid constituents decrease, particularly fats, salts, and casein, and the milk assumes the nature of colostrum. In some cases, and here is the danger, the milk becomes more a transudation than a secretion from the mammary cells. With the advent of pregnancy, my cases indicate that the child should be immediately weaned. Should a wet nurse be desirable the physician will have the responsibility of her selection. He ought to see the nurse's child is healthy and that she is so herself. Again, the great index of the teeth must not be forgotten. Good teeth being a sign of good health and good digestion, and also a guarantee of a pure breath, on the part of the nurse, this is an important point to attend to. Her child too must be about the same age as the suckling with which she is to be entrusted. The milk varies from month to month in lactation, as the table of Vomais and Bacquerel shows. In comparing, say the second, sixth,

and eleventh month of this table, the range of variation appears:—

TABLE II.[1]

Months of Lactation.

	First Month.	Sixth Month.	Eleventh Month.
Sp. gr.	1031·69	1035·35	1031·61
Water	872·84	901·51	900·63
Solid ingredients	127·16	98·49	99·37
Sugar	40·40	42·00	47·62
Butter	39·55	16·57	19·47
Casein	45·38	38·63	31·06
Salts	1·83	1·29	1·22

It will be seen that the sugar steadily increases; that the butter decreases from month to month, and that the casein does not vary much, though it declines towards the later months. It would not be in accordance with nature, therefore, to put a two months' suckling to the breast of a woman whose milk is many months older, or *vice versâ*.

Such advance has been made in the preparation of infant's food that, in my experience, wet nurses are not so much in demand as formerly. It is a popular belief that the suckling takes elements of character from the woman who suckles it, so that artificial feeding, scientifically done, may not be altogether a disadvantage if the mother's own breast is not available. *Apropos* of this, in my own practice, I have noticed that the child of the family who has been most suckled by the mother takes most after her in disposition and character, while a non-suckled child becomes more like the father. But this is apart from my subject. The variability of the vital processes between mother and child are so great that only general deductions can be drawn from my few cases. They are, at all events, suggestive; and should they elicit further information from the Society

[1] Taken from the tables of Vomais and Bacquerel, Buck's *Hygiene*, p. 103.

regarding an overlapping which the laws of nature seem to resent in the processes of human reproduction, my object in bringing them before you will be fulfilled.

Dr Ballantyne said the Society was much indebted to Dr Church for bringing the subject before the Society, and for giving them so many actual facts. The value of the paper would have been increased if they had been told the exact number of cases from which the ten cases mentioned had been selected. It seemed to him, the opinion on this subject in most text-books and in the mind of most medical men followed the line given to it by Jacobi of New York some years ago. Jacobi had not given such a large number of cases as Dr Church, and had based his paper rather upon what he thought ought to be the result of the overlapping of pregnancy and lactation, and he held that they were incompatible, but had given theories rather than facts. He himself during the reading of the paper had contrasted such cases with twins. They much resembled each other, for functionally the nursling and the fœtus in the uterus were both dependent upon the same nourishment. Twins, as was well known, often showed difference in size, one was frequently more delicate than the other, and perhaps showed just such malformation or structural changes as Dr Church had shown to be present in some cases referred to in his paper. The whole question of nutrition in pregnancy was a very difficult one, and not so easy to work out as Dr Church had taken it to be, for the personal factor came a great deal into it. He then referred to some recently published observations of Dr Noël Paton which seemed to show that if the mothers were overfed the fœtus would have greater weight, and said that this question of over-feeding or under-feeding the mother animal should be taken up by physiologists, and experiments made in that direction. The question of the manner in which nourishment was distributed in pregnancy between the mother and the fœtus was a difficult

one. In some cases the mother seemed to be the preferred part, in other cases the fœtus. The subject was a very complicated one, and probably the placenta was the dominating factor. He referred to an old French law of about 1750, which compelled every wet nurse who became pregnant while nursing to report the fact to her employer.

Dr MacVie said he was glad to have had the pleasure of hearing Dr Church's paper, and glad to hear the views of a general practitioner, a family doctor, who could draw on his own experience, and could produce evidence not so easily obtained elsewhere. There was not the slightest doubt that if too great a strain were placed upon the maternal strength, something must suffer. But it was difficult to prove that these things were due to the overlapping of pregnancy and lactation. He did not think they could leave out of account the individuality of the embryo. It must have power of its own in the selection and in the rejection of materials of nutrition of which little knowledge was possessed. A paper recently published gave six or eight samples of milk, which differed largely in composition, and yet each sample formed the nutrition of a healthy child from a healthy mother. He then referred to the fact of agricultural mares overlapping in pregnancy and lactation, and said that even the best quality of horse-flesh, hunter or race-horse, was reared in the same way—impregnation occurring about three weeks after the birth of the foal. In cows the state of things was still worse, for the cow, after calving, would be impregnated within a month, and would perhaps go on giving milk to within fourteen days of its labour. The milk was what was supplied to town people, and except on the ground of tuberculosis there were no complaints about it. He himself would not encourage the overlapping of lactation and pregnancy, especially in cases in which the stamina of the mother was not able to bear it.

Dr Webster would have liked to hear expert opinion, but

as it was a matter for general practitioners, he wished to say a few words on the subject. The paper itself was just what they wanted to hear. He considered that the state of the nervous energy at the time of pregnancy and lactation was the most supreme item, and yet it had not been mentioned at all. It was of no use to bring in the lower animals, for the strain of the human nervous system, and the stress of emotion, made a very different case from that of the cow, or the mare, or any lower animal. No experiments in the feeding of the lower animals would therefore count. He considered that when a woman became pregnant she should have a year's holiday, and not be allowed to destroy her nervous energy in any way. The paper had brought out a large field for practical therapeutics, and also taught the community at large.

Dr Haig Ferguson said they were much indebted to Dr Church. There were many points he would like to have spoken of, but the time was so late that he would not say more than refer to the importance of giving lime during pregnancy, especially to those who have had many children. He referred to one case in which a sudden unexplained death had happened in a child where the mother had been the subject of overlapping of pregnancy and lactation.

Dr Church, in reply, said that in about thirty years practice he had had, roughly speaking, a thousand cases of midwifery. Thirty of these were cases of overlapping, and of these thirty he had selected ten. He thanked the Society for their kind reception of his paper.

VI. THE ANATOMICAL VARIATIONS PRESENTED BY TWO CASES OF TWIN MONSTERS, WITH AN ACCOUNT OF THEIR DEVELOPMENTAL EXPLANATION.

By RICHARD J. A. BERRY, M.D., F.R.C.S. Ed., F.R.S. Ed., Lecturer on Anatomy in the School of Medicine of the Royal Colleges, Edinburgh.

SOME time ago, Dr F. W. N. Haultain placed in my hands two remarkable cases of twin monsters, at the same time requesting me to ascertain what were the anatomical variations present.

CASE I.—Both the twins in this case, as in the second one, are females. In the first case the twins are united together along the lateral abdominal walls and possess two umbilical cords. The line of fusion and the position of the two cords are well seen in Plate 1. After having been hardened by means of formol injections the dissection was commenced by cautiously raising up a flap, the outlines of which are indicated in the first Plate. The appearances presented after the removal of this flap are seen in Plate 2. At the line of junction of the twins there is what appears to be a septum with a liver on each side of it, and an umbilical vein passing to each liver. A further dissection (Plate 3) shows these appearances to be somewhat misleading. The apparently reduplicated liver is now seen to be a single viscus common to both twins, and the apparent septum is a falciform ligament, the only one which the twins possess. There are, however, undoubtedly two umbilical veins, one for each twin.

The liver was next removed, its appearances as viewed from the front are illustrated in Plate 4, whilst Plate 5 shows the organ as seen from the right side. The liver is a single viscus common to both twins, and as viewed from the right side is seen to be almost completely divided into two parts—anterior and posterior

—by a deep notch on its inferior surface. On replacing the liver in its original position it was ascertained that this notch was occupied by a single and transversely situated duodenal tube, which passed from the pylorus of the one stomach to the pylorus of the other. Some conception of the position occupied by the liver whilst *in situ* will be obtained by referring to Plate 6, which illustrates the appearances presented after removal of that viscus. The general mass of the small intestine is seen to occupy the most dependent part of the common abdominal cavity. The highest part of this intestinal mass is the single transversely situated duodenal tube, upon which the liver sat, as it were, astride.

On removing the abdominal portions of the alimentary canals the singular appearances illustrated in Plate 7 were eventually elicited. There are two stomachs, each of which is 9 cm. long, connected together by a single duodenal tube, 12 cm. long. From this duodenal tube, at a point 7 cm. from the right pylorus, there commences a jejunum which assumes the form of a single tube common to both twins. The jejunum is 40 cm. in length, and divides into two ilea, one for each twin. Each ileum is 30 cm. in length, and terminates quite naturally in the ileo-cæcal junction. The large intestine is perfectly regular in both twins.

With the foregoing exceptions, and the fact that the gall bladder was suppressed, the twins are normal and well formed, and had it not been for the embryological error responsible for these variations, there can be no doubt that two perfectly normal and well-nourished twins would have resulted from the pregnancy.

CASE II.—As regards the second specimen, a reference to Plates 8 and 9 shows that the condition of fusion of the twins is very similar to that in the first case, but is here more extensive. The fusion involves not only the lateral abdominal walls

but also the lateral thoracic walls, and two of the four upper limbs as far as the wrist.

It will be unnecessary to pursue the successive stages of the dissection in this instance, as they were identical with those of the first case. Precisely the same variations were found in connection with the alimentary canal and liver, the only alteration being that there was a gall bladder in the second case and none in the first.

The heart and great vessels, as is only to be expected from the thoracic fusion, present, however, some remarkable and interesting variations (see Fig. 1). To take the great vessels first, there is, in the case of the right twin, a right-sided aorta and a pulmonary trunk, both of which arise from the same ventricle. The aorta gives off a large branch which communicates with the left pulmonary artery by means of a patent ductus arteriosus, and then breaks up in an axis-like manner into a left subclavian, a left common carotid, and a right common carotid. The arch of the aorta thereafter gives off the right subclavian artery as a separate trunk.

In the case of the left twin, there is a left-sided aorta and a pulmonary trunk. The aorta gives off, in the first instance, a single trunk which divides into the right and left common carotid arteries. Immediately beyond the origin of this carotid trunk the arch gives off the right subclavian, and beyond that again the left subclavian. Having given off these three branches the aorta communicates with the left pulmonary artery by means of a patent ductus arteriosus.

As regards the veins, each twin is provided with its own superior vena cava, but the inferior venæ cavæ, just prior to their termination in the auricle, fuse together to form a single vessel.

Passing next to the consideration of the heart (Fig. 1), there is what at first sight appears to be single viscus common to both twins. As this apparently single structure contains two

auricles, four auricular appendages and four ventricles, it is

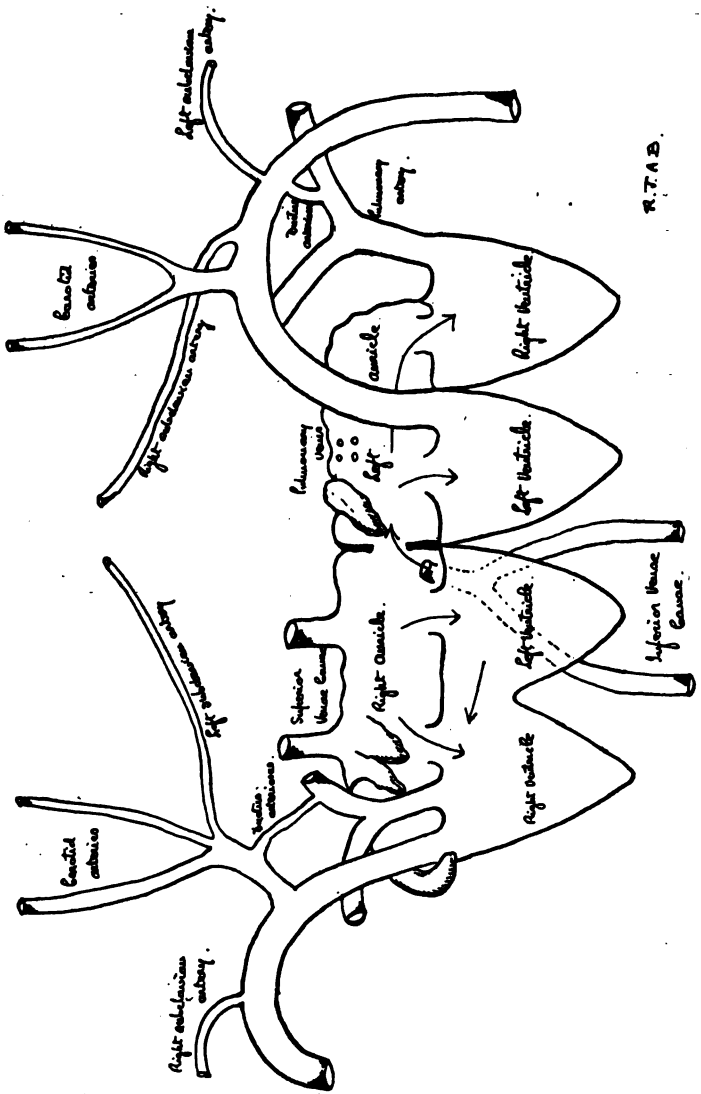

FIG. 1.—DIAGRAM OF CARDIAC AND VASCULAR ABNORMALITIES.

fairly certain that there have been two hearts which have become partially fused in the region of the sinus venosus.

As just stated, there are but two auricles. One of these is a functional right auricle for both twins. Opening into it there are the two superior venæ cavæ, the fused inferior venæ cavæ, and a single coronary sinus. Opening out of it are the apertures of three of the four auricular appendages and the openings into the right and left ventricles of the heart of the right fœtus. There is also a well-marked fossa ovalis leading into what is functionally the left auricle, and which undoubtedly belongs to the heart of the left fœtus.

The left auricle, much smaller than the right, receives the four pulmonary veins, one from each of the four lungs; that is to say, the common pulmonary trunk from each lung has not divided into two, and hence there are only four pulmonary veins instead of eight. Opening out of the left auricle there is the orifice of one of the four auricular appendages and the openings into the right and left ventricles of the heart of the left fœtus.

The ventricles are four in number; their order from right to left is as follows:—

Right ventricle Left ventricle	Right twin.
Left ventricle Right ventricle	Left twin.

The right and left ventricles of the right twin communicate with each other, and with the right auricle common to both twins. The aorta and pulmonary artery of the right twin arise from the right ventricle.

The right and left ventricles of the left twin communicate with the left auricle common to both twins, but do not communicate with each other. The aorta and pulmonary artery arise normally from their correct ventricles.

The developmental explanation of the foregoing variations.—

The chief variations to be explained may be tabulated as follows:—

A. Common to both cases.

1. Lateral fusion, more extensive in one case than the other, and the common epiblastic covering of the fused areas.
2. The single duodenal and jejunal tubes and the single liver.
3. The suppression of the gall bladder in the one case and its presence in the other.

B. Special to the second case.

4. The partial fusion of the heart, and the peculiar condition of the auricles and ventricles.
5. The condition of the great thoracic vessels.

Bearing in mind the strong similarity which exists between the two cases as evidenced by the lateral fusion, more extensive in the second example than the first, and the precisely similar nature of the intestinal variations, it is fairly obvious that whatever explanation is attempted must suffice for both cases. A further consideration of the alimentary variations shows that they are to be referred to that portion of the embryonic gut termed the mid-gut, and, in my opinion, the variations are entirely referable to the mid-gut, though this, as will be presently shown, is open to question; but putting the debatable point on one side, that is the origin of the liver whether from fore-gut or mid-gut, it is certain that the jejunum is a mid-gut development, and as both cases have only one jejunum, it is safe to assume that the two embryos in each case have had only one yolk-sac between them, that is to say, they have been developed from one ovum.

Commencing upon this hypothesis, and remembering the lateral nature of the fusion of the twins, I first assumed that two primitive grooves had been lying side by side upon a single

ovum. I endeavoured to account for these two primitive grooves by assuming bilateral segmentation of the ovum, but I was forced to abandon this position as untenable, inasmuch as if worked out it will be found to necessitate the formation of two yolk-sacs and two amnions, and their subsequent conversion into single structures by fusion. Quite apart from these objections there are others of an even more insuperable character, and consequently this supposition of bilateral segmentation of a

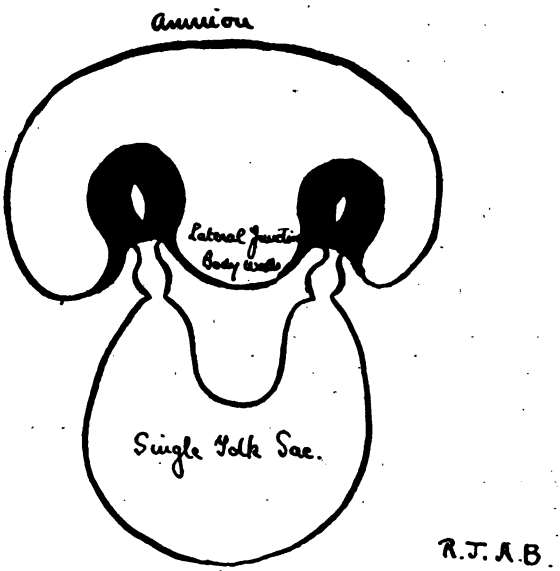

FIG. 2.—DIAGRAM TO ILLUSTRATE THE BODY FUSION.

single ovum was subsequently abandoned in favour of the following theory, which appears to offer a more satisfactory explanation of the phenomena.

1. *The explanation of the lateral fusion and the common epiblastic covering of the fused areas.*—This explanation is based on the supposition that the two embryos have been developed from a single ovum *without* bilateral segmentation. The two primitive grooves have lain side by side in such a way that the

caudal ends of the embryos have been rather nearer to each other than the cephalic ends, or, at all events, the central portions of the primitive grooves have either been nearer each other than any other portions, or have been in actual contact. What I then suppose to have taken place is illustrated in Fig. 2,

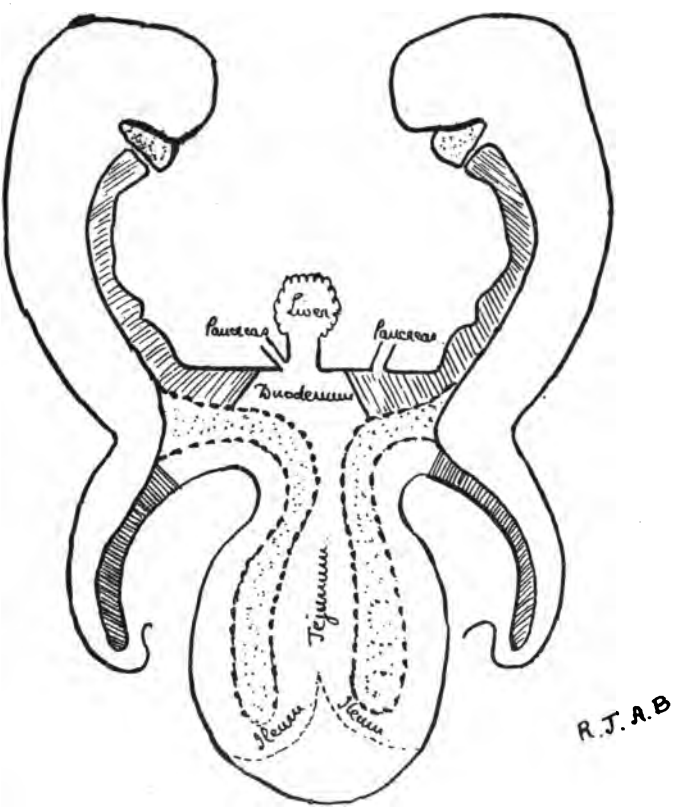

FIG. 3.—DIAGRAM TO ILLUSTRATE EVOLUTION OF SINGLE DUODENUM AND JEJUNUM FROM ONE YOLK-SAC COMMON TO BOTH EMBRYOS.

Fore- and hind-guts shaded, mid-gut unshaded. The ducts of the Pancreas—Wirsung and Santorini—are also seen.

and granting the original hypothesis—two embryos developed from a single ovum without bilateral segmentation—an easy explanation results as to the lateral fusion of the twins,

even to the greater fusion in the second example than the first; and also as to the common epiblastic covering of the fused areas and the single jejunum tube. All are easy of explanation on this hypothesis, and difficult, if not actually impossible, upon any other.

2. *The explanation of the single duodenal and jejunal tubes and the single liver.*—The hypothesis adopted in the preceding paragraph assumes the presence of a single yolk-sac common to both embryos, and Fig. 3 illustrates my conception of the evolution of the single duodenal and jejunal tubes from this common yolk-sac. Both the pyloric ends of the duodenal tube have undoubtedly been developed from independent fore-guts, whilst the intermediate portion, with the biliary duct and the single jejunum, have, in my opinion, been developed from the common yolk-sac or mid-gut. I say "in my opinion," because such an assumption necessitates the liver being a mid-gut development, and the numerous works upon embryology which have been consulted appear to me to leave the question an open one. Keith, in his *Human Embryology and Morphology*, states that the fore-gut becomes the pharynx, œsophagus, stomach, and that part of the duodenum situated in front of the opening of the common bile duct; that is to say, he appears to regard the liver as a mid-gut development. With this I entirely agree, inasmuch as in both these cases there is but one common bile duct, which opens into the intermediate portion of the single duodenal tube. Thus the liver is proved to be a single structure common to both twins, and not two liver buds fused together; and as an additional argument in support of this view, it may be stated that each liver has but one Spigelian lobe. For these various reasons I am therefore of opinion that these cases prove the liver to be a mid-gut development, and that Keith is perfectly correct in his views upon this point.

The hypothesis upon which the lateral fusion was explained

suffices therefore for the single duodenal and jejunal tubes, as well as for the single liver.

3. *The suppression of the gall bladder in the one case and its presence in the other.*—As the gall bladder is known to be developed normally as a diverticulum from the common hepatic stalk in the second month, it is perfectly easy to understand the suppression of this viscus in the one case and its presence in the other; it is at the same time impossible to offer any theory as to *why* the gall bladder diverticulum should thus grow out in the one case and not in the other.

4. *The partial fusion of the heart and the peculiar condition of the auricles and ventricles.*—From the description which has already been given of the apparently single heart, it will be sufficiently obvious that it is in reality a question of the partial fusion of two originally distinct tubular hearts. As the inferior venæ cavæ unite to form a single structure just before their termination in the functional right auricle, and as there are but two auricles with four auricular appendages, it seems fairly certain that the two originally distinct tubular hearts have fused together in the region of the sinus venosus (see Fig. 4); this is further borne out by the condition of the ventricles. On this assumption it is not very difficult to understand what has taken place.

Under normal conditions the sinus venosus shifts towards the right side of the primitive auricle, and so eventually opens into that part of it which becomes the right auricle of the adult heart, forming its atrium and the coronary sinus. The primitive auricle sends out an appendix on each side, which grows forwards around the bulbus arteriosus, whilst the primitive auricle itself becomes differentiated into a right and a left chamber by the growth of two septa—the septum primum and the septum secundum—the foramen ovale being nothing more than the interval left between these two auricular septa. In this particular instance the sinus venosus of each twin has fused

together to form a common cavity (Fig. 4), but this fusion has not affected, or perhaps only very slightly, the primitive auricles, as is evidenced by the presence of the four auricular appendages. The primitive auricle of the left twin has been divided in the ordinary way, as is further evidenced by the presence of a well-marked foramen ovale, and its left division has become the functional left auricle common to both twins. The primitive auricle of the right twin has not been divided at all,

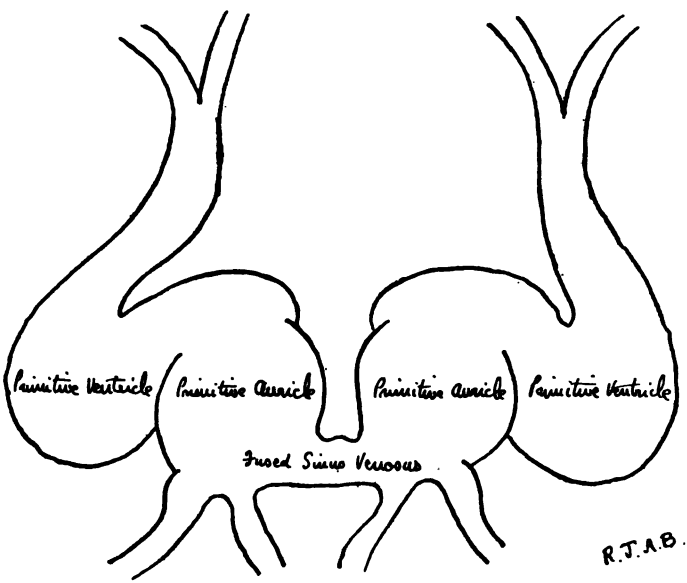

FIG. 4.—DIAGRAM TO ILLUSTRATE THE FUSION OF THE TWO HEARTS IN THE REGION OF THE SINUS VENOSUS.

or, to be more accurate, only the merest attempt has been made at such division as is shown by the presence of a thin strand, not unlike the moderator band, which is found crossing the cavity of the functional right auricle. This undivided primitive auricle of the right twin has been thrown into free communication with the right auricle of the left twin, through the fusion in the region of the sinus venosus. Hence, the functional right auricle, common to both twins, represents what should have

become the right and left auricles of the right twin and the right auricle of the left twin. This is still further borne out by the fact, that three of the four auricular appendages are connected with this functional right auricle.

The fusion of the tubular heart of each embryo having occurred in the region of the sinus venosus, the ventricles

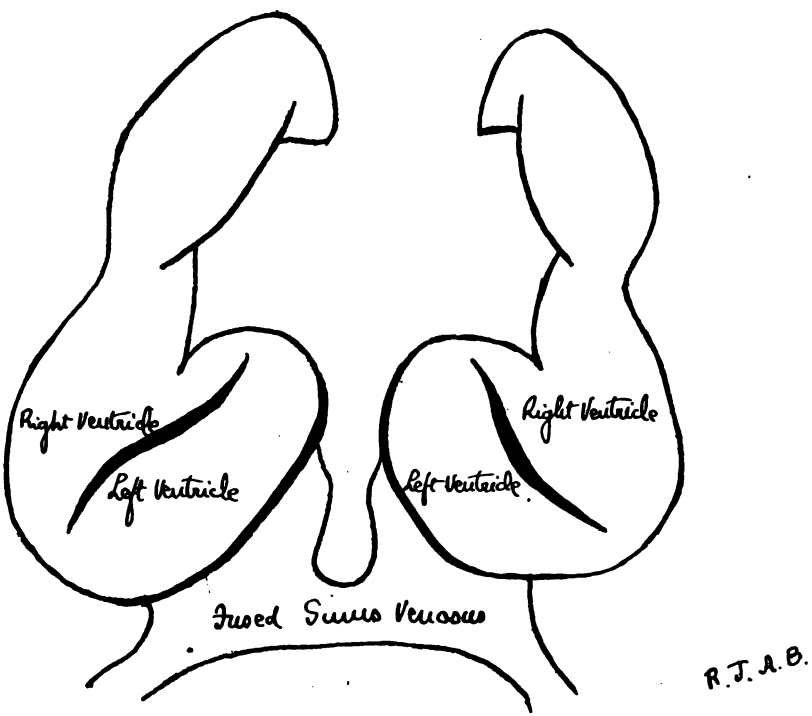

FIG. 5.—DIAGRAM TO ILLUSTRATE THE DEVELOPMENT OF THE VENTRICLES.

have altogether escaped; and hence the ventricles of the two twins are altogether separated, and those of the left twin are almost normal. An acquaintance with the normal V-shaped bend made under ordinary conditions by the ventricular part of the embryonic tubular heart to the right, and a reference to Fig. 5, will explain the order of the ventricles

from right to left as previously described. The communication which exists between the two ventricles of the right twin is explained by the non-development of the pars membranacea septi and the origin of the aorta, and the pulmonary artery from the one ventricle by the partial failure in the division of the aortic bulb, and the imperfect separation of the ventricles.

The explanation of all the cardiac abnormalities are, there-

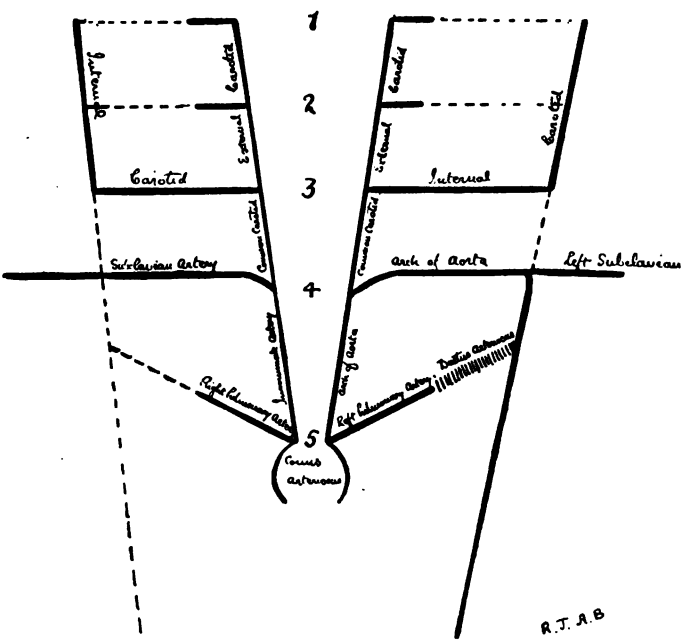

FIG. 6.—DIAGRAM TO ILLUSTRATE THE NORMAL EVOLUTION OF THE GREAT VESSELS FROM THE AORTIC ARCHES.

The dotted lines indicate those portions of the arches which disappear.

fore, referable to, first, a fusion in the region of the sinus venosus, and thereafter to the imperfect separation of the auricles and ventricles of the right twin; and it is not without interest to note that it is the right twin which is mainly at fault.

5. *The condition of the great thoracic vessels.*—The normal evolution of the aortic arches is so well understood, and the

variations to which they may give rise has been so ably worked out by Professors Young and Robinson, that it becomes an easy matter to trace the course of events in the twins of the second case. The normal evolution of the great thoracic and cervical vessels from the aortic arches is, for the sake of clearness, illustrated in Fig. 6.

As regards the vascular abnormalities in the right twin, the

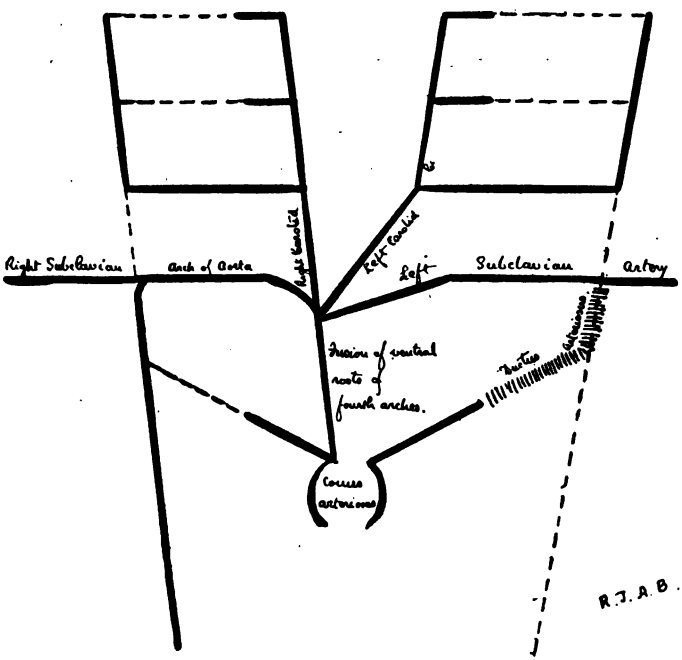

FIG. 7.—DIAGRAM TO ILLUSTRATE THE EVOLUTION OF THE GREAT VESSELS IN THE CASE OF THE RIGHT TWIN.

probable changes which have occurred, and their deviations from the type, are shown in Fig. 7. The arch of the aorta has developed from the fourth right aortic arch instead of from the fourth left. Fusion of the ventral roots of the fourth aortic arches has given rise to the stem of origin common to the two carotids and the left subclavian. All three parts of the right subclavian have

grown out from the fourth arch instead of the third part only, as is normally the case. The communication of the ductus arteriosus with the arterial stem common to the two carotids and the left subclavian, is a rather more difficult problem. It is probably due, in the first instance, to absorption of the fourth left aortic arch and the consequent shifting of the ductus arteriosus. If the left subclavian artery has grown out, as it ought to do, from the dorsal end of the fourth left aortic arch, then the ductus arteriosus must represent the dorsal end of the fifth left aortic arch plus the dorsal root of the fourth arch, which would, of course, be altogether normal. If, on the other hand, the left subclavian artery has grown out from the dorsal end of the fifth arch, the fusion having involved not only the fourth left arch, but also its dorsal root, then the ductus arteriosus is exactly where it should be, but the subclavian, as regards its third part, is somewhat abnormally developed. Whichever explanation be adopted involves a slight deviation from the type. The chief variations in the great thoracic vessels of the right twin are therefore chiefly referable to the fourth left aortic arch, that is to say, to the arch which has been concerned with the fused left upper limb of that twin.

As regards the left twin (see Fig. 8), the fourth right aortic arch has been entirely suppressed. The ventral roots of the fourth arches have fused together, producing the carotid trunk. The right subclavian has grown out independently from the fourth left arch, in consequence of the suppression of its own—the fourth right arch. The left subclavian artery has arisen from its correct position, whilst the ductus arteriosus is also in its normal position. Here, as in the right twin, the vascular abnormalities are entirely due to the suppression of that particular arch which has been concerned with the fused upper limb. As the left upper limb of the one twin is fused to the right upper limb of the other twin, it necessarily follows that the corresponding aortic arches have become suppressed

by fusion, and to this may be referred the various vascular abnormalities described.

Whilst embryologists may not agree with all the remarks made in this attempted explanation of the developmental errors responsible for the variations recorded, there seems to be no doubt that the theory upon which this explanation is based

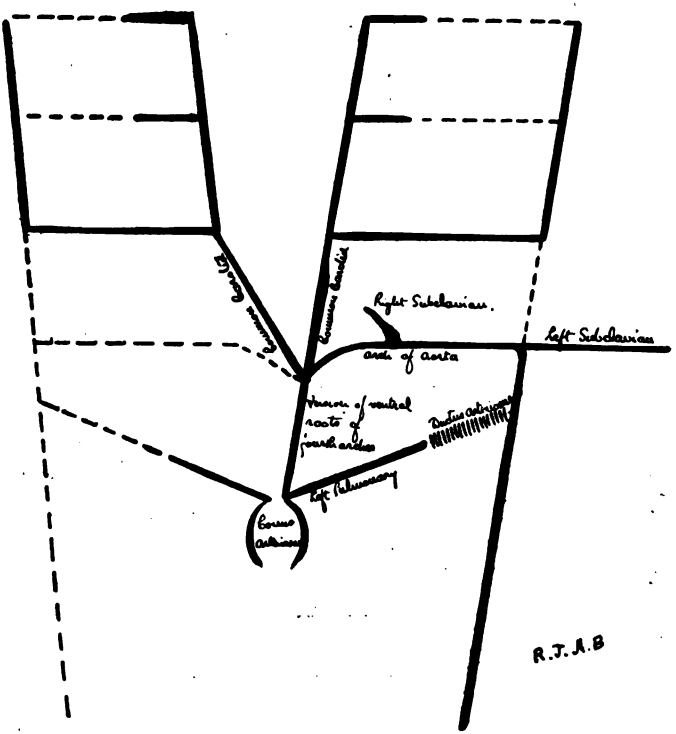

FIG. 8.—DIAGRAM TO ILLUSTRATE THE EVOLUTION OF THE GREAT VESSELS IN THE CASE OF THE LEFT TWIN.

is the correct starting-point. That twin embryos do develop side by side upon a single ovum is proved by the remarkable case published by Miss Duncan in the *Proceedings of the Anatomical and Anthropological Society of Aberdeen*, 1900-1902, under the title of "The Anatomy of a Double Chick Embryo,"

and the cases with which this paper deals would further seem to prove that bilateral segmentation of an ovum is unnecessary for the evolution of twins. The condition of the alimentary canal proves conclusively that the twins in each case have possessed but one common yolk-sac; bilateral segmentation of a single ovum would result in two yolk-sacs, and hence these cases seem to afford indubitable proof of the truth of the hypothesis adopted herein, namely, double embryos on a single ovum without bilateral segmentation. Further proof of the truth of this theory is afforded by Kamann's "Zwei Fälle von Thoracopagus tetrabrachius," published in the *Archiv für Gynäkologie*, Bd. 68, H. 3, where the condition of the alimentary canal in each case was identical with that recorded in the present paper. The present writer's theory, therefore, not only explains the two cases now under discussion, but also suffices for Miss Duncan's case and for those of Kamann. If these several cases and the resulting facts may be accepted as proving the writer's contention, the labour and thought bestowed upon these embryological problems will not have been spent in vain, for two important scientific results follow:—

1. Bilateral segmentation of a single ovum is unnecessary for the production of twins.

2. The liver is a mid-gut development.

Dr Haig Ferguson said they were much indebted to Dr Berry for having given them that most interesting paper—a paper which was a model of accuracy and reasoning. It would add very materially to the value of the *Transactions* of the Society. He thought that Dr Berry might, however, have landed himself in some difficulty, for when any of them came across interesting specimens of this nature in their practice, they would probably ask him to take the examination of them in hand. He thanked Dr Berry in the name of the Society for his most excellent paper.

Dr Haultain said he was pleased when the specimens had come under his charge, and he was now proud of them, and pleased that he had sent them to Dr Berry, for he considered that the demonstration they had had that night had been so impressive and succinct that he thought he had never listened to one that had been more so. His knowledge of embryology was somewhat crude, but it was now fifty times greater than it had been twenty minutes previously. He could not but feel sorry that his student days were over, and that he had not the chance of sitting at Dr Berry's feet for demonstrations. He thanked Dr Berry heartily. There was no doubt that the paper would add materially to the value of the *Transactions.*

Dr Ballantyne had had the pleasure of seeing the specimens while Dr Berry was working at them. He had felt then that they had fallen into the best hands, and still more did he now think so. The whole question of monstrosities and of the way in which they were produced, was a subtle one, and what Dr Berry had taken up was not so much the cause of monstrosities as the way in which individual malformations were brought about. Double monstrosities were admitted by all teratologists to be the most difficult part of the whole subject. If they took a single monster, a great many of the deformities were comparatively easily explained, *e.g.*, deformities in the neck were fairly easily explained by arrest of development of some of the branchial arches. And, again, also with regard to the aortic arches, he believed there had been some observations recently published which seemed to show that there might be a sixth aortic arch (existing for only a short time in the human subject) which possibly might be the explanation of some of the anomalies not understood before. A single monstrosity could be comparatively easily explained, because they knew the time at which the anomalies occurred, and also the embryology of them, fairly well. Dr Berry's demonstration simply showed that the better they knew embryology, the more simple did the question become,

for teratology was just disordered embryology. The difficulty arose when they came to double monstrosities. They were not from arrested development, not the products of the embryonic period at all, because there was no stage in an embryo when it was double, and it was that which constituted the great difficulty in the explanation of the ultimate cause. Teratologists were pretty well agreed that they had to go further back than the embryonic period to find an explanation of double monstrosities. This led him to say that the explanation of the embryonic streaks lying side by side was the correct one, for it had been shown to exist in some of the lower animals. It had been produced by the entrance of two spermatozoa into the same ovum. That was the explanation given of double monsters in general. It took place before actual indications of an embryo were found. Sir William Turner brought forward one difficulty with regard to that explanation in a discussion at the Royal Society, one which he (Dr Ballantyne) had never seen satisfactorily answered, viz., the question of the entrance of three spermatozoa instead of two. If the theory as to the double monstrosity was correct, it should meet the case of three. Having a double monster, the question of individual variations depended upon the same causes that are found to act in a single monster, *e.g.*, arrest of development, fusion, rapidity or slowness of growth. The explanation Dr Berry had given seemed remarkably clear, and, backed up by embryology, appeared correct. As to the amnion, Dr Berry would do well to revise his description of that part of his explanation, for he considered there was no doubt that the idea that the amnion was developed in the same way in the human subject as in the chick, must be abandoned. The earliest ovum of Peters showed the amnion perfectly formed before there was any trace of primitive streak. The suggestion made by Dr Berry Hart of the breaking down of a mesoblastic plug or the inversion theory of Mall, neither of which entailed the upgrowth of folds, were more likely explanations of the formation of the

amnion. He quite agreed that their *Transactions* would be greatly strengthened and made much more valuable by the inclusion of Dr Berry's paper, and it had been a great pleasure and an education to him to hear the paper.

Dr Scott Carmichael spoke of two similar cases which had been recently reported in Germany, one of which he had seen when he was in Germany, and of which he had followed the dissection. The report of the two cases was published in the *Berliner Wochenschrift*. He gave in detail some of the differences between the specimen he had seen (a double female) and those described by Dr Berry.

Dr Berry, in reply, thanked the Society for the extremely kind way in which his paper had been received. He was glad again to acknowledge his indebtedness to Dr Ballantyne, from whom he had received help on a previous occasion.

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